

164

Vol. I

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1941

No. 37

**THE CUNO ENGINEERING CORPORATION,
PETITIONER,**

vs.

THE AUTOMATIC DEVICES CORPORATION

**ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SECOND CIRCUIT**

PETITION FOR CERTIORARI FILED MARCH 15, 1941.

CERTIORARI GRANTED APRIL 14, 1941.

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1941

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THE CUNO ENGINEERING CORPORATION,
PETITIONER,

vs.

THE AUTOMATIC DEVICES CORPORATION

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SECOND CIRCUIT

VOL. I

INDEX.

	Original	Print
Proceedings in U. S. C. C. A., Second Circuit	1	1
Statement in compliance with Rule 13, Section 4.....	1	1
Record from D. C. U. S., District of Connecticut.....	3	2
Bill of complaint	3	2
Plaintiff's bill of particulars	9	6
Answer of defendant	10	6
Stipulation and order amending answer	18	12
Statement of evidence	21	14
Caption and appearances	21	14
Discussion	22	15
Stipulation as to certain facts	25	17
PLAINTIFF'S PRIMA FACIE CASE		
Arthur A. Johnson :		
Direct	31	21
Cross	63	46
Re-direct	89	69
Re-cross	92	71

Record from D. C. U. S., District of Connecticut—Continued
Statement of evidence—Continued

	Original	Print
Joseph H. Cohen:		
Direct	94	73
Cross	107	84
Redirect	116	91
Recross	117	92
Charles H. Cuno:		
Direct	119	94

DEFENDANT'S PROOF

Charles H. Cuno:		
Direct	125	98
Cross	131	103
S. L. Wolfson:		
Direct	137	108
Cross	163	129
Direct	165	131
Cross	167	132
Direct	168	133
Cross	171	136
Direct	173	137
Cross	174	138
Direct ..	175	139
Cross	183	145
Direct	183	146
Cross	186	148

PLAINTIFF'S REBUTTAL

Allan J. Head:		
Direct	227	179
Cross	244	195
Redirect	255	205
Recalled:		
Direct	256	206
Cross	257	208
Arthur A. Johnson:		
Direct	258	207
Cross	277	222
Stipulation and testimony taken in the suit brought by plaintiff herein against Sinko Tool & Mfg. Co. in the District Court of the United States for the Northern District of Illinois, Eastern Division, in Equity No. 16,188:		
Herbert E. Mead:		
Direct	286	229
Cross	307	246
Redirect	312	251
Resumed:		
Direct	320	267

Record from D. C. U. S., District of Connecticut—Continued
Statement of evidence—Continued

Adam John Dunsmore :	Original	Print
Direct	312	252
George W. Johnson :		
Direct	318	257
Cross	325	263
Redirect	329	266
Sidney Thomas Jessop :		
Direct	331	268

VOL. II

PLAINTIFF'S EXHIBITS

1—Three drawings of Cuno Automatic Cigar Lighter	341	277
1-A—Drawing of Cuno Automatic Cigar Lighter..	344	280
1-B—Drawing of Cuno Automatic Cigar Lighter..	345	281
1-C—Drawing of Cuno Automatic Cigar Lighter..	346	282
3—License agreements between Automatic Devices Corporation and Casco Products Corporation.	347	283
4—Mead patent No. 1,736,544.....	355	289
5—First Cohen patent No. 2,140,311.....	362	296
6—Second Cohen patent No. 2,117,232.....	372	306
28—Photostatic copy of front page and page 480 of Montgomery Ward Catalog for Spring and Summer of 1929.....	379	313
29—Cuno chart—re sales.....	381	315
29-A—Smith British Patent No. 285,200.....	382	316
31—Plaintiff's Exhibit 30 of Sinko case. (Bill of sale)	386	322
32—Plaintiff's Exhibit 31 of Sinko case. (Five sheets made by Mead)	388	324
34—Plaintiff's Exhibit 34 of Sinko case. (List of tools)	396	332
36—Plaintiff's Exhibit 36 of Sinko case (Montgom- ery Ward Catalog)	397	333
38—Photograph of Exhibit 33 of Sinko case. (Cigar lighter model)	399	335
39—List headed "shipments of Jesco Automatch" as indicated by invoices of S. T. Jessop Com- pany, Incorporated	401	337

DEFENDANT'S EXHIBITS

B—Drawing of Casco commercial lighter	404	340
C—Print of one of the forms of the Mead device...	405	341
E—"Saturday Evening Post" advertisement.....	406	342
F—Sample of trade paper advertisement.....	407	343
H—Four sheets, loose-leaf catalog sheets.....	408	344

Record from D. C. U. S., District of Connecticut—Continued

Statement of evidence—Continued

Original Print

I.—Copies of prior art patents (portion relied upon) :

493,380 Hammarstrom, March 14, 1903.....	416	352
852,326 Harley, April 30, 1907.....	419	355
1,025,852 Andrews, May 7, 1912.....	422	358
1,143,572 Denhard, June 15, 1915.....	427	363
1,294,045 Cavanagh, February 11, 1919.....	432	368
1,318,168 Newsom, October 7, 1919.....	436	372
1,372,207 Stahl, March 22, 1921.....	443	379
1,373,583 Adams, April 5, 1921.....	446	382
1,376,154 Morris, April 26, 1921.....	450	386
1,437,701 Zecchini, December 5, 1922.....	454	390
1,540,628 Hurxthal, et al., June 2, 1925.....	460	396
1,622,334 Metzger, March 29, 1927.....	465	401
1,607,686 Langos, January 1, 1929.....	469	405
1,732,784 Wolfson, et al., October 22, 1929.....	473	409
1,757,255 Mahan, May 6, 1930.....	478	414
1,838,363 Copeland, December 29, 1931.....	483	419
1,844,206 Copeland, February 9, 1932.....	489	425
1,944,925 Cohen, January 30, 1934.....	493	429
1,980,157 Wolfson, November 6, 1934.....	497	433
2,000,783 Ashton, November 17, 1936.....	504	440
2,084,966 Ashton, June 22, 1937.....	512	449
2,117,703 Cohen, May 17, 1938.....	522	459
Br. 298,073 Rupps, May 9, 1929.....	530	467
Stipulated extract of file wrappers of Mead, Patent No. 1,736,544; Cohen, Patent No. 2,140,311; and Cohen, Patent No. 2,117,232	533	471
Findings of fact and conclusions of law.....	551	483
Judgment (marked Final Decree) which was signed and entered on the 19th day of June, 1940.....	568	496
Notice of appeal	571	499
Stipulation designating contents of record on appeal...	572	499
Stipulation regarding reproduction of defendant's exhibits E, F and H	579	504
Stipulation extending time for completing appeal record	580	504
Affidavit of James T. Kline	581	505
Stipulation as to record	582	505
Clerk's certificate	583	
Proceedings in U. S. C. C. A., Second Circuit.....	584	506
Opinion, Hand, J.	584	506
Petition for rehearing	590	511
Orders denying petition for rehearing	598	517
Judgment	601	518
Clerk's certificate	603	
Order allowing certiorari	604	518

[fol. 1]

**IN UNITED STATES CIRCUIT COURT OF APPEALS,
SECOND CIRCUIT**

STATEMENT IN COMPLIANCE WITH RULE 13, SECTION 4

1. Plaintiff, The Automatic Devices Corporation, is a corporation duly organized and existing under the laws of the state of Connecticut, and has its principal place of business at Bridgeport, Fairfield County, Connecticut. Defendant, The Cuno Engineering Corporation, is a corporation duly organized and existing under the laws of the state of Connecticut, and has its principal place of business at Meriden, New Haven County, Connecticut.

2. The complaint was filed on February 20, 1939. It was brought for infringement of the following letters patent of the United States: No. 1,736,544, granted on November 19, 1929, on the invention of H. E. Mead, for Cigar Lighter; No. 2,117,232, granted on May 10, 1938, on the invention of J. H. Cohen, for Cigar Lighter; and No. 2,140,311, granted on December 13, 1938, on the invention of J. H. Cohen, for Cigar Lighter. Plaintiff served a bill of particulars on March 27, 1939, asserting that claims 1, 2, 3 and 11 of Mead 1,736,544, claims 1, 2, 10, 16 and 18 of Cohen 2,117,232, and claims 3, 20 and 26 of Cohen 2,140,311 would be relied upon on final hearing.

3. The answer of defendant was filed on April 10, 1939.

4. A motion of plaintiff for a preliminary injunction to restrain defendant from infringing upon claims numbered 2, 3, and 11 of patent in suit to Mead, No. 1,736,544, was filed September 7, 1939, and was presented to the Court on September 14, 1939. The said motion for preliminary injunction was denied on September 19, 1939.

5. The action was tried on final hearing by Honorable Carroll C. Hincks on November 2 and 3, 1939.

[fol. 2] 6. No question was referred to a commissioner, a master, or a referee.

7. No arrest was made, bail taken, or property attached in connection with the action.

8. On May 13, 1940, a preliminary decision was filed.

9. On May 20, 1940, at 2:30 P. M. before Judge C. C. Hincks, arguments were heard with respect to the preliminary decision of the Court. Decision reserved.

10. On June 7, 1940, the final opinion of the Court was filed.

11. On June 19, 1940, judgment was signed and entered holding claims numbered 1, 2, 3, and 11 of patent to Mead, No. 1,736,544, if valid, not to be infringed and claims numbered 1, 2, 10, 16, and 18 of Cohen patent, No. 2,117,232 to be invalid, and claims numbered 3 and 20 of Cohen patent in suit, No. 2,140,311, to be invalid.

12. On August 22, 1940, notice of appeal from said judgment was served.

[fol. 3] IN DISTRICT COURT OF THE UNITED STATES, DISTRICT
OF CONNECTICUT

Civil Action, Docket No. 97

THE AUTOMATIC DEVICES CORPORATION, Plaintiff,

v.

THE CUNO ENGINEERING CORPORATION, Defendant

COMPLAINT—Filed February 20, 1939

Equitable Relief Is Sought

Plaintiff, The Automatic Devices Corporation, for its complaint against defendant, The Cuno Engineering Corporation, alleges:

1. That plaintiff, The Automatic Devices Corporation, is a corporation duly organized and existing under the laws of the State of Connecticut, having a regular and established place of business at Bridgeport, Fairfield County, Connecticut, and that, upon information and belief, defendant, The Cuno Engineering Corporation, is a corporation duly organized and existing under the laws of the State of Connecticut, and has its principal and a regular and established place of business at Meriden, New Haven County, Connecticut.

2. That this suit is brought under the patent laws of the United States for infringement by defendant upon the following letters patent of the United States:

[fol. 4]

Number	Name	Date	Title
1,736,544	H. E. Mead	Nov. 19, 1929	Cigar Lighter
2,117,232	J. H. Cohen	May 10, 1938	Cigar Lighter
2,140,311	J. H. Cohen	Dec. 13, 1938	Cigar Lighter

3. That on and prior to August 24, 1927, Herbert E. Mead was the inventor of new and useful improvements in Cigar Lighter; that on the 24th day of August, 1927, he duly filed in the United States Patent Office application for letters patent of the United States for said improvements; that said application was assigned Serial No. 215,236; that on the 19th day of November, 1929, Letters Patent of the United States No. 1,736,544 were duly and lawfully issued to S. T. Jessop Co., Inc., a corporation duly organized and then existing under the laws of the State of Illinois and having a place of business at Chicago, Cook County, Illinois, as assignee of the inventor, Herbert E. Mead, for improvements in Cigar Lighter; and that the invention of said letters patent has not been abandoned. Profert of said letters patent is hereby made.

4. That by mesne assignments, duly executed, delivered, accepted and recorded in the United States Patent Office, the invention of and said letters patent No. 1,736,544, together with the right to sue and recover for all past infringement thereon, were duly assigned to plaintiff on or about the 6th day of February, 1936, and that since said assignment and transfer plaintiff has been and still is the owner thereof. Profert of the said assignments is hereby made.

5. That on and prior to March 29, 1933, Joseph H. Cohen was the inventor of new and useful improvements in Cigar Lighter; that on the 29th day of March, 1933, he duly filed in the United States Patent Office application for letters [fol. 5] patent of the United States for said improvements; that said application was assigned Serial No. 663,402; that on the 10th day of May, 1938, letters patent of the United States No. 2,117,232 were duly and lawfully issued to plaintiff, as assignee of the inventor, Joseph H. Cohen, for an invention in Cigar Lighter; that the invention of said letters patent has not been abandoned; and that since said date plaintiff has been and still is the owner of said letters patent. Profert of said letters patent is hereby made.

6. That on and prior to July 23, 1932, Joseph H. Cohen was the inventor of new and useful improvements in Cigar Lighter; that on the 23rd day of July, 1932, he duly filed in the United States Patent Office application for letters patent of the United States for said improvements; that said application was assigned Serial No. 624,193; that a divisional application of said application for letters patent filed July 23, 1932, was filed as required by the United States Patent Office on the 2nd day of January, 1937; that this application was assigned Serial No. 118,838; that on the 13th day of December, 1938, letters patent of the United States No. 2,140,311 were duly and lawfully issued to the plaintiff, as assignee of the inventor, Joseph H. Cohen, for the invention in Cigar Lighter; that the invention of said letters patent has not been abandoned; and that since said date plaintiff has been and still is the owner of said letters patent. Profert of said letters patent is hereby made.

7. That on or about the 1st day of May, 1936, a non-exclusive license in writing was duly granted to and accepted by Casco Products Corporation, a corporation duly organized and existing under the laws of the State of Connecticut, and having its principal place of business at [fol. 6] Bridgeport, Fairfield County, Connecticut, to manufacture, use and sell devices embodying the invention of said letters patent No. 1,736,544, that under the terms and conditions of the said license agreement said licensee received and accepted a license under said letters patent Nos. 2,117,232 and 2,140,311, to manufacture, use and sell devices embodying the invention thereof, and that since said 1st day of May, 1936, said license has been and now is in full force and effect; that the inventions of said letters patent Nos. 1,736,544, 2,117,232 and 2,140,311 are of great value, importance, benefit and advantage to plaintiff, its said licensee and to the public; that plaintiff, its predecessor and said licensee have expended large sums of money in making the inventions described and claimed in said letters patent Nos. 1,736,544, 2,117,232 and 2,140,311 profitable to them and useful to the public; that plaintiff's said licensee has manufactured and sold devices embodying the inventions of said letters patent Nos. 1,736,544, 2,117,232 and 2,140,311 which have been introduced into extensive commercial use; that plaintiff's said licensee has created a great and increasing demand for devices embodying the

inventions of said letters patent Nos. 1,736,544, 2,117,232 and 2,140,311; that plaintiff's said licensee is prepared, equipped and ready to supply the demand that has been created for such devices, and that the public has been given the benefit and advantage of the inventions of said letters patent Nos. 1,736,544, 2,117,232 and 2,140,311. Profert of said license is hereby made.

8. That, on information and belief, defendant, The Cuno Engineering Corporation, well knowing the rights secured to plaintiff as aforesaid, without license or permission and in violation and willful infringement of the rights of the plaintiff in and to said letters patent Nos. 1,736,544, 2,117,-[fol. 7] 232 and 2,140,311, after the grant of each of said letters patent, before the commencement of this suit, and within six (6) years prior thereto, did unlawfully manufacture, use and sell devices embodying the inventions of said letters patent Nos. 1,736,544, 2,117,232 and 2,140,311 and will continue to do so unless enjoined in this Court; and that, unless said infringement is restrained by this Court, further and irreparable damage will be caused to plaintiff and its said licensee.

9. That the said licensee of plaintiff has placed the Statutory notice on all cigar lighters manufactured and sold by it embodying the invention of said letters patent No. 1,736,544, and that the defendant has been duly notified of its infringement upon said letters patent Nos. 1,736,554, 2,117,232 and 2,140,311, but, nevertheless, as plaintiff is informed and believes and therefore alleges defendant continued and now continues to infringe upon each of said letters patent since said notice, whereby defendant has continued to profit and the plaintiff has been damaged.

Wherefore, plaintiff prays for a decree holding that said letters patent Nos. 1,736,544, 2,117,232 and 2,140,311 are good and valid in law, that plaintiff is vested with title to the same, that defendant has infringed upon said letters patent Nos. 1,736,544, 2,117,232 and 2,140,311, that a permanent injunction, and a preliminary injunction during the pendency of this suit, be granted, restraining and enjoining defendant, its agents, attorneys, servants and employees, and all others acting by and under its direction or authority, its successors or assigns, from making or causing to be made, using or causing to be used, selling or causing to be

sold devices or parts thereof made according to and embody-
[fol. 8] ing the inventions disclosed and claimed in said
letters patent Nos. 1,736,544, 2,117,232 and 2,140,311, that
an accounting of defendant's profits and plaintiff's damages
because of defendant's infringement upon said letters pat-
ent Nos. 1,736,544, 2,117,232 and 2,140,311 be awarded to
plaintiff, and that, because of the willful nature of defend-
ant's infringement upon said letters patent, plaintiff's dam-
ages shall be increased in a sum not exceeding three (3)
times the amount thereof, and that plaintiff be awarded costs.

The Automatic Devices Corporation, By (Sgd.) Ar-
thur A. Johnson, President. (Sgd.) William E.
Allen, Jr., Attorney for Plaintiff, 955 Main St.,
Bridgeport, Conn. (Sgd.) James T. Kline, Thomas
J. Byrne, of Counsel.

*Duly sworn to by Arthur A. Johnson, jurat omitted in
printing.*

[fol. 9] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S BILL OF PARTICULARS—Filed March 28, 1939

The claims of the respective patents in suit which are
infringed by defendant and upon which plaintiff intends
to rely on final hearing follow:

Claims numbered 1, 2, 3 and 11 of Mead Patent No.
1,736,544,

Claims numbered 1, 2, 10, 16 and 18 of Cohen Patent No.
2,117,232, and

Claims numbered 3, 20 and 26 of Cohen Patent No.
2,140,311.

The Automatic Devices Corporation, By Thomas J.
Byrne, Attorney.

Dated: March 27, 1939.

Copy received this 27th day of March, 1939.

R. S. Allyn, Attorney for Defendant.

[fol. 10] IN UNITED STATES DISTRICT COURT

ANSWER—Filed April 10, 1939

Defendant, The Cuno Engineering Corporation, for its
Answer to the Complaint herein alleges:

1. Defendant admits it is a Connecticut Corporation and
has a principal and a regular and established place of busi-

ness at Meriden, Connecticut, but Defendant is not advised as to the other allegations of Paragraph numbered "1" of the complaint and leaves the Plaintiff to its proof thereof.

2. Defendant admits this is a suit brought under the patent laws of the United States for alleged infringement of United States Letters Patent.

3. Defendant admits that Letters Patent of the United States No. 1,736,544 were issued to S. T. Jessop Co., Inc., as assignee of Herbert E. Mead on Nov. 19, 1929, for alleged improvements in Cigar Lighter but denies that said Letters Patent were duly and lawfully issued and further denies each and every other allegation in Paragraph numbered "3."

4. Defendant has no knowledge save by the Complaint as to the allegations contained in Paragraph numbered "4" and therefore denies the same and leaves the Plaintiff to its proof thereof.

5. Defendant admits that Letters Patent No. 2,117,232 were issued to Plaintiff as assignee of Joseph H. Cohen on May 10, 1938, for alleged improvements in Cigar Lighter but denies that said Letters Patent were duly and lawfully issued and further denies each and every other allegation in Paragraph numbered "5."

[fol. 11] 6. Defendant admits that Letters Patent No. 2,140,311 were issued to Plaintiff as assignee of Joseph H. Cohen on December 13, 1938, for alleged improvements in Cigar Lighter but denies that said Letters Patent were duly and lawfully issued and further denies each and every other allegation in Paragraph numbered "6."

7. Defendant has no knowledge save by the Complaint as to the allegations contained in Paragraph numbered "7" and therefore denies the same and leaves the Plaintiff to its proof.

8. Defendant denies each and every allegation contained in Paragraph numbered "8."

9. Defendant admits it received a notice charging infringement of Letters Patent Nos. 1,736,544, 2,117,232 and 2,140,311 but has no knowledge as to the placing of the statutory notices on cigar lighters by Plaintiff's licensee

and denies each and every other allegation of Paragraph numbered "9."

10. Further answering, the Defendant avers that the alleged inventions or improvements described and claimed in said Letters Patent Nos. 1,736,544, 2,117,232 and 2,140,311 and each of them, and attempted to be patented thereby, and every material and substantial part thereof, do not embody any substantial variation or change from what belonged to the state of the art as it existed at the time of the alleged invention thereof by the inventors, and did not then involve the exercise of inventive faculty or constitute the subject matter of invention proper to be secured by the grant of Letters Patent within the meaning or intent of the statutes relating thereto. Said patents are therefore invalid.

[fol. 12] 11. Further answering, the Defendant avers that said Letters Patent Nos. 1,736,544, 2,117,232 and 2,140,311 referred to in the Complaint were and are wholly invalid and void because the alleged inventions, improvements and discoveries purported to be patented therein and every material and substantial part thereof were published, described and patented prior to the alleged invention or discovery thereof by said inventors, or more than two years prior to the filing date of the applications for said Letters Patent in and by the following Letters Patent and publications, to wit:

United States Letters Patent

Hammerstrom	No. 493,380	Mar. 14, 1893
Burnett	972,811	Oct. 18, 1910
Hadaway	1,046,777	Dec. 10, 1912
Delano	Reissue 14,842	Apr. 20, 1920
Morris	1,376,154	Apr. 26, 1921
Hogel	1,433,277	Oct. 24, 1922
Zecchini	1,437,701	Dec. 5, 1922
Donle	1,492,967	May 6, 1924
Cuno, et al.	1,556,082	Oct. 6, 1925
Reid	1,565,499	Dec. 15, 1925
Copeland	1,838,363	Dec. 29, 1931
	(Application filed	Mar. 9, 1927)
Copeland	1,844,206	Feb. 9, 1932
	(Application filed	Apr. 18, 1927)
Wolfson	1,980,157	Nov. 6, 1934
	(Application filed	Apr. 10, 1931)

Foreign Patents

S. Smith and Sons	British No. 285,200
and F. W. Miller	Application date: Dec. 14, 1926
and F. Miller	Complete accepted: Feb. 16, 1928

[fol. 13]

Publications

Provisional Specification No. 31,643 filed Dec. 14, 1926; and Provisional Specification No. 14,563 filed May 31, 1927, in the British Patent Office, London, England, by S. Smith and Sons, of London, England, and F. W. Miller and F. Miller, both of Warwickshire, England, for patent on Automatic Cut-out for Electric Cigar and Cigarette Lighter which eventuated in British patent No. 285,200; and also by other patents and publications not now known to the Defendant but which, when ascertained, the Defendant prays leave to insert herein by amendment to this Answer.

12. Further answering, on information and belief, the Defendant avers that said Letters Patent Nos. 1,736,544, 2,117,232 and 2,140,311 referred to in the Complaint, and each of them, were and are wholly invalid and void because the inventors thereof and each of them were not the original, sole and first inventors or discoverers of the alleged inventions, improvements or discoveries purported to be patented therein, but that the same and every substantial and material part thereof were, prior to the alleged invention or discovery thereof by said inventors, known and used by others in this country, to wit, the patentees of the patents listed in Paragraph numbered "11" hereof and also by other persons and corporations whose names are not now known to the Defendant but which, when ascertained, Defendant prays leave to insert herein by proper amendment.

13. Further answering, the Defendant avers that the description and claims of the alleged improvements in said Letters Patent and each of them is not in such full, clear, [fol. 14] concise and exact terms so as to enable any person skilled in the art or science to which they pertain or with which they are most nearly connected, to make, construct, compound and use the same.

14. Further answering, the Defendant avers that all of the claims of said Letters Patent are ambiguous, uncer-

tain, indefinite, misleading and obscure and fail to distinctly point out and distinctly set forth the part, improvement or combination which the inventors claim as their inventions or discoveries, as is required by the statutes in such cases made and provided and said letters patent are therefore invalid.

15. Further answering, the Defendant avers that said Letters Patent and each of them were unlawfully and improperly issued and therefore are invalid because neither alleged invention was or is sufficiently useful and important under the requirements of Section 4893 to justly entitle the applicant to a patent under the law; and that the Commissioner of Patents exceeded his authority in issuing said letters patent and said letters patent and each of them are therefore void.

16. Further answering, the Defendant avers that each of the claims of the Cohen patents Nos. 2,117,232 and 2,140,311 in suit is invalid as directed to an unpatentable aggregation, the invention if any residing solely in the construction of the sockets.

17. Further answering, the Defendant avers, upon information and belief, that while the applications for the said Letters Patent were pending in the United States Patent Office, the applicants so limited and confined the claims of said applications voluntarily and under the requirements of the Commissioner of Patents, that the Plaintiff herein cannot now seek for or obtain constructions for such claims sufficiently broad to cover any device made, used, or sold by this Defendant.

18. Further answering, the Defendant avers, upon information and belief, that said Letters Patent and the claims thereof should be given a very narrow construction because whatever of commercial use has attended the manufacture and sale of Plaintiff's devices is due not to the patentees' work but to the work of others including extensive advertising, automatic machine production, aggressive sales efforts and precision workmanship and causes other than the disclosures of the patents in suit.

19. Further answering, the Defendant avers upon information and belief that Letters Patent No. 2,140,311 issued to Joseph H. Cohen and all the claims thereof are in-

valid and void for double patenting because a device substantially identical in character with a device purported to be covered by the claims of said Letters Patent No. 2,140,311 was previously patented to said patentee, Joseph H. Cohen, in Letters Patent No. 2,117,703 issued May 17, 1938; and that any invention disclosed in Patent No. 2,117,703 and not claimed therein was abandoned.

20. Further answering, the Defendant avers that said Letters Patent Nos. 2,117,232 and 2,140,311 are invalid and void because the patentee Cohen purposely delayed the issuance of said Letters Patent and kept the applications pending in the United States Patent Office a great many years for the purpose of placing obstacles in the path of competition and thus stifling rather than promoting the useful arts.

21. Further answering, the Defendant avers that the Letters Patent in suit are not infringed because Defendant's device is not the equivalent or substantial equivalent of anything described and claimed in any of said Letters Patent.

22. Defendant further avers that Plaintiff is not entitled to any of the relief prayed for in the Complaint, or any other relief against Defendant.

Wherefore, Defendant prays that the Complaint be dismissed with reasonable costs and disbursements, and that Defendant may have such further and other relief as to this Honorable Court may seem equitable.

Dated, April 8th, 1939.

The Cuno Engineering Corporation, Defendant. By
(Sgd.) Charles H. Cuno, President.

(Sgd.) Clarence W. Bronson, Attorney for Defendant,
129 Church Street, New Haven, Conn.

(Sgd.) Robert S. Allyn, of Counsel, 41 Park Row,
New York City, N. Y.

[fol. 17] *Duly sworn to by Charles H. Cuno. Jurat omitted in printing.*

[fol. 18] IN UNITED STATES DISTRICT COURT, DISTRICT OF
CONNECTICUT

[Title omitted]

STIPULATION AND ORDER AMENDING ANSWER—Filed October
4, 1939

It is hereby Stipulated and Agreed by and between the attorneys for the parties herein that paragraph 14 of the Answer of defendant shall be amended by inserting in line 2 before "said," each of; in the same line before "are" the words in suit shall be inserted; and in line 7 of the same paragraph the words "the statutes" shall be erased and in place thereof substituted the words Section 4888 of the Revised Statutes.

It is further stipulated the Answer shall be further amended by adding the following paragraphs:

23. Defendant further avers that letters patent No. 1,736,544 issued to Mead and particularly claims 2, 3 and 11 thereof are invalid and void because the alleged inventions purported to be patented therein were invented by Francis D. Copeland, of San Francisco, California, prior to the dates of the inventions purported to be patented by said claims of said letters patent, according to the Copeland letters patent No. 1,844,206 filed April 18, 1927.

24. Defendant further avers that letters patent No. 1,736,544 issued to Mead and particularly claim 11 thereof are invalid and void because the alleged invention purported to be patented therein was invented by Joshua M. Morris, [fol. 19] of Rochester, New York, prior to the date of invention purported to be patented by said claim of said letters patent, according to the Morris letters patent No. 1,376,154 filed October 2, 1919.

25. That the application for letters patent No. 2,140,311 a—originally filed on July 23, 1932, contained no allowable claims therein sufficiently broad to embrace defendant's cigar lighters complained of, and that more than two years subsequent to the date of filing of said application on July 23, 1932, a divisional application was filed

and claims Nos. 3, 20 and 26 of said letters patent No. 2,140,311, were added to said application in an effort to embrace defendant's type of cigar lighters; that subsequent to the date of filing of said application on July 23, 1932, and prior to the date when said claims Nos. 3, 20 and 26 were added to the application, defendant's competitor Sinko Tool and Manufacturing Co., manufactured and sold automatic cigar lighters and it and defendant acquired continuous rights which are antagonistic to the rights plaintiff seeks to enforce here and because of that fact intervening rights arose in favor of defendant and against the plaintiff, which rights have been at all times since and are now available to defendant whereby plaintiff should not allege infringement of said claims by defendant.

26. Defendant further avers that letters patent No. 2,140,311 issued to Cohen and particularly claims Nos. 3, 20 and 26 thereof are invalid and void because new matter had been added subsequent to the filing of the original application on July 23, 1932, and because the claims thereof and particularly claims Nos. 3, 20 and 26 cover and embrace claimed subject matter materially and substantially different from the inventions disclosed and embraced in the original application as filed on July 23, 1932.

[fol. 20] 27. Further answering defendant avers, upon information and belief, that while the application for letters patent No. 2,140,311 was pending in the United States Patent Office the applicant inserted certain amendments and limitations in the claims now numbered "20" and "26" and possibly other claims of said letters patent, which limitations Plaintiff now seeks to eliminate by construction in order to broaden out said claims to cover any device made, sold or used by Defendant.

28. Further answering defendant avers, upon information and belief, that while the application for letters patent No. 2,117,232 was pending in the United States Patent Office the applicant inserted certain amendments and limitations in the claim now numbered "10" and possibly other claims of said letters patent, which limitations Plaintiff now seeks to eliminate by construction in order to broaden

out said claims to cover any device made, sold or used by Defendant.

(Sgd.) James T. Kline, George F. Smyth, Attorneys for Plaintiff.

Dated, New York, N. Y., Sept. 26, 1939.

(Sgd.) Clarence W. Bronson, Attorney for Defendant.

(Sgd.) R. S. Allyn, H. R. Johns, of Counsel for Defendant.

Thomas J. Byrne, of Counsel for Plaintiff.

It is so Ordered: (Sgd.) C. C. Hincks, United States District Judge.

[fol. 21] IN UNITED STATES DISTRICT COURT, DISTRICT OF CONNECTICUT, NEW HAVEN, CONNECTICUT

November 2, 1939, 10:30 A. M.

Civil Action, Docket No. 97

THE AUTOMATIC DEVICES CORPORATION, Plaintiff,
against

THE CUNO ENGINEERING CORPORATION, Defendant

Statement of Evidence

Before Honorable Carroll C. Hincks, District Judge

APPEARANCES:

For the Plaintiff: James T. Kline, Esq., and George F. Smyth, Esq., Attorneys for Plaintiff, 945 Main Street, Bridgeport, Connecticut; Cooper, Kerr & Dunham, Esquires, 233 Broadway, New York, by Thomas J. Byrne, Esq., and Henry M. Huxley, Esq., 38 South Dearborn Street, Chicago, of Counsel.

[fol. 22] For the Defendant: Clarence W. Bronson, Esq., and Charles M. Lyman, Esq., Attorneys for Defendant, 129 Church Street, New Haven, Connecticut; Robert S. Allyn, Esq., 41 Park Row, New York, and H. R. Johns, Esq., of Counsel.

DISCUSSION

Mr. Byrne: May I have the file of the case, please? There are certain stipulations which we want to offer, if we may. First let me state, if your Honor please, so that we will have it together in the record at one place, that we stand upon claims numbered 1, 2, 3 and 11 of the Mead patent 1,736,544 in suit, and upon claims 3 and 20 of Cohen patent 2,140,311, and claims numbered 1, 2, 10, 16 and 18 of the Cohen patent 2,117,232. We are not standing upon claim numbered 26 of Cohen patent 2,140,311. We believe it is unnecessary to trouble the Court with that claim, although we did mention that claim in a bill of particulars.

The Court: These long numbers always bewilder me. May I suggest that we agree on referring to the Cohen patents as the first and second?

Mr. Byrne: Surely, your Honor.

The Court: Which shall we call the first?

Mr. Byrne: Let us call the first patent No. 2,140,311.

The Court: Why do we call that first?

Mr. Byrne: Filed first, if your Honor please.

The Court: Very well.

Mr. Byrne: The Automatic Devices Corporation, plaintiff, is a Connecticut corporation, and the defendant, The Cuno Engineering Corporation, is also a Connecticut corporation. That is a subject of stipulation between counsel. It was also stipulated between counsel as to the construction of devices of the defendant, and in the stipulation they are referred to: Fig. 1, Fig. 2, Figs. 3, 4, and 5, with respect to Cuno Automatic Lighter, February, 1939. They are referred to as Exhibit 1 and I ask that these three drawings be marked as Exhibit 1.

The Court: Very well.

Mr. Byrne: Those three together, please. You can mark it afterwards, just as you like. The three together. Plaintiff's Exhibit 1, three drawings.

(Plaintiff's Exhibit 1: Three drawings of Cuno Automatic Cigar Lighter.)

Mr. Byrne: I also offer in evidence as exhibits 1A, 1B and 1C, three drawings of the device of the defendant which are covered by the stipulation, and request that they be given the numbers exhibits 1A, 1B and 1C, respectively.

(Plaintiff's Exhibits 1-A, 1-B, and 1-C: Three drawings of Cuno Automatic Cigar Lighter.)

Mr. Byrne: Covered by the stipulation is a cigar lighter of the manufacture of the defendant which is there referred to as Exhibit 2. I ask that that be marked Plaintiff's Exhibit 2.

(Plaintiff's Exhibit 2: Cigar lighter manufactured by the defendant.)

Mr. Byrne: Attached to the stipulation that I have referred to are copies of licenses from Automatic Devices Corporation, the plaintiff, to Casco Products Corporation, a Connecticut corporation referred to by Mr. Allyn, and I offer them and ask that they be marked Exhibit 3, the two licenses.

(Plaintiff's Exhibit 3: License agreement, May 1, 1936, between Automatic Devices Corporation and Casco Products Corporation; license agreement, February 23, 1939, [fol. 24] between Automatic Devices Corporation and Casco Products Corporation.)

Mr. Byrne: I offer in evidence a copy of the Mead patent in suit, 1,736,544, and ask that that be marked Exhibit 4.

(Plaintiff's Exhibit 4: Copy of Mead patent No. 1,736,544.)

Mr. Byrne: I also offer in evidence a copy of the first Cohen patent No. 2,140,311 and ask that that be marked Exhibit 5.

(Plaintiff's Exhibit 5: Copy of the first Cohen patent, No. 2,140,311.)

Mr. Byrne: I also offer in evidence a copy of the second Cohen patent, patent in suit, No. 2,117,232, and ask that it be marked Plaintiff's Exhibit 6.

(Plaintiff's Exhibit 6: Copy of second Cohen patent in suit, No. 2,117,232.)

Mr. Byrne: I suggest, Mr. Reporter, that you copy into the record at this place the stipulation to which I have been referring, so that we will have it at one place, because there are a number of other matters regarding soft copies of patents, etc., which pertain particularly to the other side—those first four pages.

(The stipulation referred to is as follows):

[fol. 25]

[Title omitted]

STIPULATION AS TO CERTAIN FACTS

“The parties to the above entitled action, by their attorneys, hereby stipulate as follows:

1. That regular printed copies or photostatic reproductions of the specifications and drawings of United States and foreign Letters Patent, or any printed publications set up in the pleadings, or any other publication of which thirty (30) days' notice has been given, shall be admitted, subject to correction of errors, as satisfactory proofs of such letters patent and printed publications, without certification, and that the printed dates of filing, sealing, publication, or delivery, appearing thereon shall be taken, subject to correction of errors, as establishing such dates; and that, unless evidence to the contrary shall be introduced, the descriptive matter (other than the claims) and the drawings of United States letters patent shall be taken to be the same as the descriptive matter (other than the claims) and the drawings of the application as originally filed, and that either party may introduce evidence to correctly show what the [fol. 26] descriptive matter and drawings of any United States letters patent were as originally filed.

2. That the corporate status of plaintiff is as alleged in paragraph numbered 1 of the complaint.

3. That, prior to the filing of the complaint in this action, the plaintiff was and now is the owner of the entire right, title and interest in and to United States letters patent No. 1,736,544, issued November 19, 1929, to Herbert E. Mead, assignor to S. T. Jessop Co., Inc., of Chicago, Illinois; No. 2,117,232, issued May 10, 1938, to J. H. Cohen, assignor to the plaintiff herein, and No. 2,140,311, issued December 13, 1938, to J. H. Cohen, assignor to the plaintiff herein.

That the entire right, title and interest in and to the Mead patent No. 1,736,544 from and after the date of issuance was as follows: On April 25, 1934, S. T. Jessop Co., Inc., assigned the entire right, title and interest in and to said letters patent, together with all right to sue for and recover damages and profits arising out of past and future infringe-

ments, to Paul R. Kirchner, of New York, N. Y.; on May 3, 1934, the said Kirchner assigned all right, title and interest in and to said letters patent No. 1,736,544, together with the right to sue for and recover all damages and profits on account of past and future infringements, to Casco Products Corporation, a corporation of Connecticut; on October 29, 1934, said Casco Products Corporation assigned all right, title and interest in and to said letters patent No. 1,736,544, together with all right to sue for and recover damages and profits on account of past and future infringements, to Joseph H. Cohen, of Bridgeport, Connecticut; on February 6, 1936, said Joseph H. Cohen assigned all right, title and interest in and to said letters patent to the plaintiff herein; [fol. 27] and on May 1, 1936, The Automatic Devices Corporation granted unto Casco Products Corporation, a corporation of Connecticut, having its principal place of business at Bridgeport, Connecticut, a non-exclusive right and license to manufacture, use and/or sell throughout the United States and territories thereof, and the Dominion of Canada, automatic cigar lighters embodying the inventions of said letters patent No. 1,736,544, and embodying the inventions of any applications for patent on automatic lighters or patents eventuating thereon, then owned, or at any time thereafter owned or controlled by the plaintiff herein, to the full end of the term or terms for which said patents or reissues or extensions thereof have or shall be granted, according to the two license agreements between plaintiff and said Casco Products Corporation, a copy of each of which is attached hereto.

4. That, prior to the filing of the complaint herein, and within six years prior thereto and subsequent to the issuance of letters patent No. 1,736,544, No. 2,117,232 and No. 2,140,311 in suit, the defendant manufactured and offered for sale cigar lighters, exemplified by the drawings attached hereto and marked 'Cuno Automatic Cigar Lighter February 1939,' and the specimen of cigar lighter submitted herewith and marked 'Plaintiff's Exhibit 2,' and the drawings attached hereto and marked 'Exhibit 1A,' 'Exhibit 1B' and 'Exhibit 1C,' exemplifying what defendant has made and sold since the filing of the complaint herein.

5. That during the prosecution of the Mead patent No. 1,736,544 in the Patent Office, the Examiner referred to,

as prior art, patents to Metzger No. 1,622,334 and Harley No. 852,326 and no other prior art. During the prosecution of Cohen No. 2,140,311, the Examiner referred to patents to Mead No. 1,736,544, Cohen No. 1,944,925, Ashton No. 2,060,783, Ashton No. 2,084,966, the British patent to Rupps No. 298,073, Wolfson, et al. No. 1,732,784, Copeland No. 1,844,206, and no other prior art. During the prosecution of Cohen No. 2,117,232, the Examiner referred to patents to Adams No. 1,373,583, Morris No. 1,376,154, Langos No. 1,697,686, Mead No. 1,736,544, Mahan No. 1,757,255 and no other prior art.

Signed, James T. Kline, George F. Smyth, Attorneys for Plaintiff.

Dated, September 26, 1939.

Clarence W. Bronson, Attorney for Defendant; R. S. Allyn, of Counsel for Defendant; Thomas J. Byrne, of Counsel for Plaintiff."

[fol. 29] Mr. Byrne: I offer in evidence a copy of the transcript of record in the case brought by this plaintiff against Sinko Tool & Manufacturing Company. The record is for the Court of Appeals for the Seventh Circuit. I ask that it be marked Plaintiff's Exhibit 7. The purpose of offering this record, and the sole purpose, is merely to show what was before the Court in the Sinko case, and not for any evidential effect.

Mr. Allyn: I do not see that it is particularly pertinent, certainly not in whole. I would hate to have to see that go up on appeal in the printed form.

Mr. Byrne: I offer it as a physical exhibit.

Mr. Huxley: I think my brother made the statement that the evidence in this case would be substantially different from what it was in the case before Judge Holly. We think it is not. Of course, Judge Holly's decision is in no way binding upon your Honor. It has, however, a persuasive value and it is important to know whether or not the evidence in this case is substantially different from the evidence in that case, so that this record is to show what was before the Court, and is offered for no other purpose whatever.

Mr. Byrne: The rule of our Circuit is that records of this nature are constantly admitted for the purpose which I have stated.

The Court: I am not familiar with the rule. In principle, it appears to me to be incompetent. I will have to ask you to refer me to the rule. Your associate has said Judge Holly's decision is not binding on the Court. It is perfectly obvious.

Mr. Byrne: I quite agree to that.

The Court: Why, then, have you a right to burden the Court with evidence of something that is not binding upon the Court?

[fol. 30] Mr. Byrne: It is put here not for an evidential purpose, but for the purpose of showing what was before the Court in the other case.

The Court: The only purpose of evidence is evidence.

It is not admissible as an exhibit unless it is evidence of some material issue.

Mr. Byrne: Well, if your Honor please, then, I will ask that it be marked for identification because I will get the authorities on that, I am reasonably sure. I have had the experience in this very court of having such a record introduced for the purpose which I stated.

The Court: Very well. Mark it for identification. I have no authority to the contrary. I am just speaking on general principle.

(Plaintiff's Exhibit 7 for identification: Transcript of record in the case of Automatic Devices Corporation vs. Sinko Tool & Manufacturing Company.)

Mr. Byrne: I offer in evidence one of the Sinko cigar lighters which was involved in the Sinko case to which I have referred, which was before Judge Holly, and ask that that be marked as Plaintiff's Exhibit 8.

Mr. Allyn: May I ask how that is pertinent, your Honor?

Mr. Byrne: For the same reasons I advanced with respect to the record, if your Honor please, to show the device that was before the Court there.

The Court: I think it is the same ruling indicated. Mark it for identification. What number are you suggesting?

Clerk Stevens: Exhibit 8 for identification.

(Plaintiff's Exhibit 8 for Identification: Sinko Cigar Lighter.)

[fol. 31] ARTHUR A. JOHNSON, called as a witness on behalf of the plaintiff, being first duly sworn by Clerk Stevens, testified as follows:

By Clerk Stevens:

Q. Your full name, please?

A. Arthur A. Johnson.

Q. Where do you reside?

A. Bridgeport, Connecticut.

Direct examination.

By Mr. Byrne:

Q. How old are you, Mr. Johnson?

A. 45 years old.

Q. And what is your occupation?

A. I am a patent attorney and professional engineer.

Q. You are, I believe, President of the plaintiff in this action?

A. I am.

Q. Will you please state your experience in connection with inventions and letters patent, and particularly with respect to cigar lighters, and state the period over which you have had contact with cigar lighters?

A. I was registered in the patent office, to practice as an attorney in 1918. Shortly after that, I spent about a year and a quarter in the United States Patent Office as an assistant examiner. And after leaving the patent office, I have been engaged continuously in the work of filing and prosecuting patent applications, study of patents and commercial devices in relation thereto, and both as to validity and as to infringement.

In 1924 I made contact with the Casco Products—with the Connecticut Automotive Specialties Company—and Mr. Joseph H. Cohen, and began to be active in connection with cigar lighters for automobile purposes. From that time, in about 1924, to the present time, I have given a great deal of time and attention to cigar lighters and cigar [fol. 32] lighter patents, and have watched the growth and development of the cigar lighter industry, particularly as it applies to automobile cigar lighters, and I have made quite a few inventions myself in connection with that work.

In doing this work, I was called upon to go to the Con-

necicut Automotive Specialties Company plant, and then to the plant of its successor, Casco Products Corporation, sometimes twice a week, and I spent quite a little time there watching the manufacture of the cigar lighters and discussing improvements and advancements with Mr. Cohen and his collaborators.

Q. Have you made inventions in other arts?

A. I have made inventions in the typewriter art, where I did a great deal of work, and in the manifolding art.

Q. And have taken out in all about seventy some patents?

A. About 72 patents.

Q. Have you ever testified before in a suit in the Federal Court with respect to letters patent?

A. I have in cases where I have actually had intimate knowledge of the art, such as in the autographic register art and the cigar lighter art.

Q. Mr. Johnson, have you read and do you understand the Mead patent in suit, 1,736,544?

A. I do.

Q. Will you please explain the invention of that patent, and in this connection you may refer to enlarged drawings and animated devices if you have them, in order to make the matter as clear as possible.

A. The Mead patent discloses a wireless cigar lighter. By that is meant a cigar lighter in which the igniting unit which is illustrated in Mead in Fig. 8, carrying a resistance coil, is brought to incandescence in a holder or base shown in Fig. 1, and after it is brought to incandescence it is removed completely, mechanically and electrically, and applied to the cigar or cigarette in the mouth of the user. The wireless cigar lighter is also characterized by the fact that it has a resistance which is capable, because of its mass, of storing heat, so that the heat will be available by the time the igniting unit is brought to the cigarette.

Q. You refer to the resistance 83 on that drawing, Mr. Johnson?

A. Yes, that is correct. In the Mead's specific construction the igniting unit is made in the form of a plug 71 and has a knob 61, and at the inner end of the plug there is an igniting resistance coil 83. The holding device comprises a base 31 with a shell 41. This shell in the specific form that Mead illustrated is rotatably mounted on a stud 42, shown in Fig. 5.

By the Court:

Q. The shell you designate as the socket?

A. Yes, the shell or socket 41.

Q. I think "socket" is a plainer terminology from my point of view.

A. Well, a socket sometimes might not even be a shell. In the usual sense, it means something that holds it.

Q. In this Mead device you say this shell to which you refer is a socket?

A. That is right.

By Mr. Byrne:

Q. That is socket 41?

A. Socket 41. The holding device has a wire 57 connected to the battery. That is, the grounded side of the device and the parts colored brown in this enlarged drawing of Mead, are the grounded parts. The holding device also includes a live or hot contact 52, which is connected by a wire 58 to the other side of the battery, the contact 52 and the socket 41 forming the terminals of the holding device.

[fol. 34] In the igniting unit, the center inner convolution of the resistance wire of the igniting unit, is connected by these blue parts to a pin 75, which projects laterally, or rather, radially through the plug. The other end of the resistance wire is engaged with the shell 71 of the plug which is colored yellow here.

When the igniting unit is inserted in the socket, the yellow shell 71 engages the brown socket 41, and the pin 75, moving through a slot in the brown socket, is brought into position to be engaged subsequently by the contact 52.

To bring the device to circuit-closing position in Mead's embodiment of the invention, the plug is rotated. That rotary movement carries the socket along with it, and in order to return it sometime later, the socket is connected to the outside of a return spring 47, while the inside convolution is anchored.

When the igniting unit is turned to circuit-closing position it moves into engagement with the contact 52. Now, so far as making the circuit is concerned, any piece of metal would have sufficed to close the circuit, but in Mead this contact performs the double function, because of its shape,

of engaging and holding the igniting unit in circuit-closing position. When the heating element attains the desired temperature for use, the heat coming from the heating element impinges upon the return spring, and then, if it is made of bimetal, tends to increase its turning force, so that it overcomes the detent action between the part 53 of the contact 52 and the pin 75, with the result that the pin moves away from the detent contact and opens the circuit. Mead also suggests that the contact-detent member 52-53 may be kept in position by a bimetallic controller 54, and he says, in his specification, that you can use either this arrangement 54, where you simply take some of the tension off the spring 52 to allow that rotary movement, or you [fol. 35] can use the spring 47 with the extra layer 47a to motivate the automatic action, or you can use both together.

The Court: I don't understand the function of the bimetallic 54.

A. Your Honor, I have here an animated model of this Mead device, with which I think I can demonstrate that point.

Mr. Byrne: Before he starts, may I offer this drawing that the witness was testifying about, showing one sheet of the drawings of Mead's patent, as Plaintiff's Exhibit 9?

(Plaintiff's Exhibit 9: Drawing showing one of Mead's patents.)

Q. Now, go ahead.

A. In this embodiment of the invention where the member 54 cooperates with the contact 52, the contact 52 would be made light in itself, so as not to have any detent action. There would still be a contact, but there would not be a detent. This member 54 adds to the force of that contact. As this member 54 heats up, it will, and I can demonstrate here, gradually decrease the detent action of the spring and permit the contact finger 75 to pass by.

Mr. Byrne: The animated model testified to by the witness is offered in evidence as Plaintiff's Exhibit 10.

(Plaintiff's Exhibit 10: Animated model of Mead device.)

The Witness: In the Mead device the igniting resistance 83 not only performs its usual function of providing a glowing mass to carry to the end of the cigarette, but it also

[fol. 36] performs the function of controlling its own circuit, because the heat from the resistance coil is the thing which actually causes the circuit to be opened. The working resistance, in other words, in the Mead device is the very thing which causes the circuit to be opened. I say "opened." I mean opened when the device is at the proper temperature for use.

Sheet 2, a modification of the Mead invention, is substantially the same except that to return the socket member he has a coil spring 105 quite independent of the thermal action and away from the heat of the heating element. It depends here on the heat coming up around these parts. It has these slots through which the heat can come up and reach the bimetal either through the metal parts contacting it or by heating the air in that vicinity.

In the Mead device, as illustrated, the base 31 is in the form of a socket, because at this time the wireless cigar lighters were clamped onto the dash-board rather than being passed through a hole in the dash-board. Of course, Mead could have put this mechanism back of the dash-board.

By Mr. Byrne:

Q. This mechanism? -

A. The mechanism of the cigar lighter back of the dash-board, as one of these devices will show, and you could put the igniting unit through that hole, but the whole mechanism could not be inserted through the hole. The mechanism is rather large.

Mr. Byrne: I offer in evidence the enlarged drawing of Sheet 2 of the Mead patent and ask that it be marked "Plaintiff's Exhibit 11."

(Plaintiff's Exhibit 11: Enlarged drawing of sheet 2 of the Mead patent.)

[fol. 37] Q. Mr. Johnson, I tender to you a device and ask you if you can identify it, and if so, state what it is and when and where you learned about it.

A. I believe this is the device—the base of this device is the cigar lighter which Mr. Cohen and I discussed in 1929 when we came across it in the museum of The Casco Products Corporation. We were looking for another cigar lighter to compare with something that had just come on the market, and we ran across this device. The reason I have any

doubt at all is that there are quite a few of these, and this is identified as exhibit 7 in the Chicago case. If that jibes with my Chicago testimony, then I am sure of it. There are five or six devices of this around, and I have no identifying marks on this myself, but it was either this one exactly or one like it.

Mr. Huxley: If counsel has no objection: That is the one.

The Witness: So far as the igniting unit is concerned, I am not sure that this is the exact igniting unit, because I believe the igniting unit we had had the heating element in it and this one is out. These things are interchangeable and one gets in the wrong place.

Mr. Allyn: I don't object to Brother Huxley's statement that this is the one that was in the Chicago case, but as to whether it was the one he had in 1929 I don't know.

The Witness: I would know, your Honor, by the fact that when I took it to Chicago I had it in my pocket until I testified about it. Now it has been shuffled up with the others, so I have to go by this tag.

[fol. 38] By the Court:

Q. When was the Chicago case?

A. Last May, I believe it was, or April.

Q. It hasn't been in your pocket from 1929 until you went to Chicago?

A. No, sir.

Q. How could you identify it as the one in Chicago?

A. Because I went back to the museum and got it.

Q. When you went back to get it wasn't there a lapse of some eight years between the time when you first saw it and the second time?

A. Yes, sir. In looking for the Mead device at the time of this trial, I recalled having seen it. I went to the museum and I myself picked it out of the drawer.

By Mr. Byrne:

Q. Mr. Johnson, is the device which you have in your hand, which was marked "Exhibit 7" in the Sinko case, like the device which you saw in the museum in 1929?

A. Yes, sir.

Mr. Allyn: May I have that question and answer read?
(The last question and answer were read.)

Mr. Byrne: If your Honor please, I want to have one of these devices before the Court, but the particular device about which I interrogated the witness is marked as an exhibit in the Chicago case. I would appreciate it if my friends on the other side would examine this other device—they are familiar with it—and agree with me that I may offer in evidence this one or one like it in place of the one which is an exhibit in the Chicago case.

[fol. 39] The Court: Let me suggest that you put in the substitute, subject to verification. Colonel Allyn can then look it over at his convenience.

Mr. Allyn: I think that would be better, because I should like to examine it a little more.

Mr. Byrne: I offer the substitute Mead's device and ask that it be marked "Exhibit 12."

(Plaintiff's Exhibit 12: Substitute for Mead's device.)

The Witness: Let me see it.

(Mr. Byrne handed an object to the witness.)

No, it is the other one that would correspond to that.

By Mr. Byrne:

Q. That one?

A. Yes.

Mr. Allyn: May I have it appear on the record that my brother has now substituted a third form?

Mr. Byrne: Let us have the fact recited on the record.

The Court: The record will show the whole situation.

Mr. Byrne: Surely. I am not substituting anything here. I don't think that Mr. Allyn means to imply that. There were two or three or four of these devices lying on the table and I picked up one and submitted it to the witness, and he said that that wasn't exactly like the one Exhibit 7 in the Sinko case but that another device which I picked up from the table and tendered to the witness is like Exhibit 7 in the Sinko case. It is this device which I desire to offer in evidence and which has been marked Exhibit 12.

[fol. 40] By Mr. Byrne:

Q. Mr. Johnson, have you ever tested one of these Mead lighters, exemplified by Exhibit 12, to determine whether or not it will function?

A. Yes, sir. Yesterday I tested it, Exhibit 12, with the igniting unit that has a tag on it marked "good." It happens to be in the same place now. I found it worked perfectly satisfactory.

Q. Have you a battery here?

A. Yes, sir.

Q. Could you operate this device?

A. Yes, sir.

Mr. Byrne: It will take but a minute or two, if your Honor please.

The Court: I am willing to take his word for it unless the defendant wants to question it. Of course I don't know.

Mr. Huxley: The question of operativeness has been raised here by our opponents.

The Court: I think you are entitled to it.

Mr. Byrne: It will take but a minute. I will ask the witness to take Exhibit 12 and operate it here.

The Court: Is that exhibit safeguarded so that the plug as well as the socket is marked?

Mr. Byrne: Yes, sir.

The Court: I remember at an earlier case I ran into some difficulties with the plugs running around loose.

Mr. Byrne: Well, the plug on Exhibit 12 has attached thereto a yellow tag upon which the word "good" appears.

The Court: I suggest that you mark the plug with the exhibit also.

Mr. Byrne: Yes. The plug on exhibit 12 was also marked with the same exhibit number.

[fol. 41] By Mr. Huxley:

Q. The plug has been turned into circuit-closing position?

A. Yes, I have turned the plug into circuit-closing position and put the terminals onto the battery. The igniting unit heated up, it clicked to "off" position, and I removed it while it was still glowing.

By Mr. Byrne:

Q. Mr. Johnson, in this turmoil which I created about picking up the wrong Mead model, you made the statement that the one I tendered to you was not like the one which has been offered in evidence as exhibit 12, which,

I understand, corresponds to exhibit 7 in the Sinko case. Will you state for the record, please, what the difference is?

A. Yes. In Plaintiff's Exhibit 12 the bimetallic strip is wrapped around the socket instead of being in the socket. They were made both ways. In one case they had the bi-metal strips in a coil down at the bottom of the socket, and in the other it was wrapped around the socket.

Q. Now, Mr. Johnson, will you please look at the Mead early lighter, which I tender you, and state whether or not that corresponds to the description which you gave with respect to another Mead model?

A. That is correct. This one has the coil down in the socket just about like it is shown here (indicating in Fig. 15 of the Mead patent).

Mr. Byrne: I offer the Mead device in evidence and ask that it be marked "Plaintiff's Exhibit 13."

(Plaintiff's Exhibit 13: Mead device.)

Q. What difference in distinction is there between exhibits 12 and 13? Is it solely with respect to that spring? [fol. 42] A. The location of the bimetallic spring. There may be other minor details, but it functions just exactly the same.

Q. Did you ever make a test of this Mead lighter, exhibit 13, which you had in your hand a few moments ago and which I held before you, to see whether or not it is operative?

A. Yes, I made the test of the holding device of exhibit 13 with the knob of exhibit 12. The knob, which is now in exhibit 13 is burned out. I made that test yesterday, and they both work satisfactorily with that knob.

Q. When you say that the knob is burned out, what do you mean?

A. The igniting resistance in exhibit 13 has been burned out.

Q. Will you please turn to the first Cohen patent in suit, number 2,140,311, and explain the same, please? You may in your explanation refer to enlarged drawings which we have here.

A. Yes.

Q. And an animated model of the device, if you have it.

A. I have an animated model of the form of the invention shown in the Cohen patent on sheet 2. In this patent there

is again the igniting unit, which is constituted by the parts 23, 52, yellow part 58, and the heating element 54.

By the Court:

Q. What color is the heating element?

A. Red. Here the socket 24, which is colored brown, may be inserted through a hole in the dash-board of the automobile, as is the practice in connection with standard equipment lighters. All the working parts are contained within the compass of the shell, or socket, except the clamp 27, which is slid on from the back afterward and clamped in position by the nut 29.

In this device the current from the battery is supplied, [fol. 43] as usual, through the ground, through all the ground parts, including the socket 24 to the cigar lighter. The live side of the battery is connected by a wire 63, which is clamped onto this tube, or stem, 31, which has on it a pair of contact fingers, 32. These contact fingers, in this case, do not directly engage the uniting unit at all, but engage a contact 45 on a safety plate 42. The manual standard equipment lighters which were being manufactured by Casco at that time had this safety plate then, so that if something were dropped in the well the live contact would be protected, because there would be a gap between the end of this contact and the supply contact, is shown in green.

Q. The end of this supply contact? You meant 45, did you not?

A. 45. No, that is not right. Repeating it: The end of the purple contact 45 would not be in contact with the green, and therefore if you dropped a metallic object in the shell you would not have a short circuit.

Now, the igniting unit has a contact 58, which is yellow and which engages a tongue 70 on the socket, to connect the yellow parts with the battery.

This annular contact 58 is connected by a stud 57 to the inner part of the resistance—the red resistance wire 54. The outer part is connected to a cup, which contains the resistance and which is colored red—cup 56, which contains the resistance is colored blue.

In the normal position of the igniting unit in the holder, which is shown in Figure 1, the yellow part on the igniter contacts the grounded shell, and the blue contact on the

igniter engages a purple contact plate 43, carried by this safety plate. That purple plate is not live at that time. When you want to use the cigar lighter you push in on the igniting unit, which brings the purple contact 45 into engagement with the bimetallic contact latch fingers 32, and these fingers extend over the shoulder 67, as shown in [fol. 44] Figure 2, and hold the safety plate in closed-circuit position, the igniting unit being connected by the safety plate, as I have above explained.

Mr. Byrne: I offer in evidence the enlargement of Sheet 1 of the first Cohen patent, 2,140,311, and ask that it be marked "Exhibit 14."

(Plaintiff's Exhibit 14: Enlargement of Sheet 1 of first Cohen patent.)

Mr. Allyn: If your Honor pleases, is it necessary that this become part of the record—these bulky exhibits?

Mr. Byrne: They are physical exhibits.

The Court: Physical exhibits have always been part of the record. If you can agree on any more convenient proof for the record, there would be no objection.

By the Court:

Q. Let me interrupt. There is something I don't quite understand. Where is the contact between the yellow member of the igniter unit—

A. The yellow member slides on the inner wall of the socket, but in the energized position—

Q. I thought—

A. If you will refer to this animated model—I was going to refer to it as soon as I got through with this second sheet.

In the operation of this device this yellow contact slides on the inner wall of the socket and it becomes the grounded side.

Q. The inner wall of what?

A. The socket, to insure good contact in the energized position.

Q. I don't understand what the tongue is in the socket.

A. That is what I was getting to. In the energized [fol. 45] position this tongue 70 engages the yellow flange 58 and insures good contact.

Q. Where does it engage?

A. Right here, the upper part of Figure 9, referring to sheet 2 of the first Cohen patent.

Q. There really is no difference, so far as the contact goes, when the igniter is in the position shown at Figure 9 from when it first enters the socket, is there?

A. Not so far as the yellow contact is concerned, except that it is an improved contact, because this is a springy part and has to be pushed away.

Q. The contact is for the whole length of the inner shell, is it not?

A. That is correct, your Honor.

Q. When you insert the igniter it will make the contact at the outermost part of the inner shell?

A. Yes.

Q. And the contact will continue?

A. Yes. Physical engagement is present here, but you can't make this absolutely accurately.

Q. I understand that. Go ahead.

A. In the form of the first Cohen invention, shown in sheet 2, the situation as regards these contact fingers has been reversed. That is instead of the fingers being mounted on the stationary part of the base, the fingers are mounted on the sliding plate. I have an animated model of sheet 2, construction of the first Cohen patent, and from this it will be seen that when the igniting unit is pushed in the safety plate with the contact fingers which carry it reach down and engage the green or current supply terminal, and the fingers grasp over the shoulder on the green current supply terminal, closing the circuit. When the igniting unit reaches the proper temperature, these fingers expand, and spring 48, which is placed under tension during that operation, returns the igniting unit and the safety plate to open-circuit position.

[fol. 46] By the Court:

Q. I don't understand that spring. What kind of spring is it?

A. Coil spring—expansion spring. I haven't got it in the animated model, but the one end of the coil spring contacts the base proper of the holder and the other end of it reaches up and engages the back surface of the safety plate. It is expanded here to the limit, which is controlled by a lug 50, extending into the socket.

Mr. Byrne: I offer in evidence the enlarged drawing of Sheet 2 of the first Cohen patent and ask that it be marked "Plaintiff's Exhibit 15."

(Plaintiff's Exhibit 15: Enlarged drawing of Sheet 2 of the first Cohen patent).

Mr. Byrne: I will also offer in evidence the animated model of the first Cohen patent and ask that it be marked "Exhibit 16."

(Plaintiff's Exhibit 16: Animated model of the first Cohen patent.)

The Witness: I would like to point out that in this construction—

Q. Of the second Cohen patent?

A. Of the first Cohen patent. In the construction of the first Cohen patent the contacts are co-axially disposed relative to the igniting unit and the heating element, and here they are not mere contacts, and not mere latches, but they are also bi-metallic,—so that with these two simple fingers you get the double function or triple function of making contact first, second, latching the circuit closed, and third, expanding to open the circuit and permit the interruption of the current.

Q. In the device of this first Cohen patent the plug is moved into the socket and it is then in inoperative position, is it not?

A. That is correct.

[fol. 47] Q. That is the normal holding position while you are going along without seeking a light?

A. Yes, that is the idling position.

Q. Then, in order to heat the igniting unit or coil, you do what?

A. You push in on the igniting unit, move the igniting unit longitudinally by a push-and-pull movement into the closed circuit position, where it remains until the heating element is heated up, and then is pushed outwardly by longitudinal movement.

By the Court:

Q. What is the radial spring actuated pin 68?

A. That is a friction device to hold it in idling position or wherever it is put.

By Mr. Byrne:

Q. To prevent it from dropping out?

A. That is right.

Q. In this embodiment we have co-axial relation between the thermostatic features and the other features of that device, is that it?

A. That is correct.

By the Court:

Q. I don't know just what that means. Will you explain to me just what you mean by "co-axial position"?

A. I mean this: That the whole business is symmetrical and the center of the contact carrying plate, or the contact fingers, is on the same center as the plug and heating element, so that it all can be embraced within this cylindrical holding device. Those were the limits that had to be maintained to make the device practical for standard equipment purposes.

Q. Just one point. With respect to that yellow contact [fol. 48] member in the igniter, is that a disc? Does it make contact around the entire inner perimeter of the shell?

A. It is a disc, your Honor.

Q. Making contact?

A. Just a flange on the end of a piece that may or may not make contact anywhere. We don't depend on it. That is why we have this tongue 70. You could not make it that accurate to depend solely on hit-and-miss, so they lance the socket at one place to make sure it touches.

By Mr. Byrne:

Q. That effectually takes care of any wear incidental to the device and it insures proper electrical contact?

A. That is correct.

Q. Now, will you turn to the second Cohen patent in suit and explain the device of that patent?

The Court: I don't know whether it is important. I am not sure that I quite visualize the tongue of that contact.

A. Will you give me that lighter, please?

(An object was handed to the witness.)

Q. Is the tongue stamped out of the inner wall?

A. Yes, I can show it to you in the actual device. This is what it is. It is simply a lanced portion forming a tongue.

Mr. Byrne: I offer in evidence the non-automatic lighter just referred to by the witness and ask that it be marked "Plaintiff's Exhibit 17."

(Plaintiff's Exhibit 17: Non-automatic lighter.)

[fol. 49] By Mr. Byrne:

Q. Now, Mr. Johnson, will you turn to the second Cohen patent in suit and explain the device of that patent? You can make reference, as usual, to the enlarged colored drawings which we have here and to any other animated model which you may have.

A. In the second Cohen patent the safety plate feature which was in the first patent has been dropped or omitted, thereby giving the possibility of permitting the bimetallic control fingers to directly grasp a part of the igniting unit. In this device the igniting unit is constituted by the parts 32, 36, 33, and 45, the latter being the flanged collar, which engages the grounded part of the holding device, as in the first Cohen patent. The end of the flanged collar carries a cup, 42, within which is the igniting resistance 41, the inner convolution of the igniting unit being connected by the yellow stud 44 and the outer convolution being connected to the cup. The holding device is constituted by a shell or socket 13, which is adapted to be inserted through a hole in the instrument board 11, after which a clamp is fastened in place by nuts 18 and 20. The socket is grounded and receives its current through the chassis of the car that way. The live terminal of the battery is connected by a wire 29 to a stud 26, which secures the contact fingers 22 in place on the end wall of the socket.

In this embodiment of the invention there is the tongue 50 that we referred to a few minutes ago on the socket 13, which engages the annular flange of the member 45 and which insures good electric engagement.

When the igniting unit is pushed in from the idling position shown in Figure 1 to the operative position shown in Figure 2, the ferrule, or cup, 43, containing the heating element, is pushed between the bimetal fingers 22 and the igniting unit, particularly the circuit-closing part of it, [fol. 50] which is the blue part here, is held in closed-cir-

cuit position by these fingers, which can have the three functions: providing a contact, providing a catch, and being self-releasing when the heat from the heating element heats them up.

I have an animated model of the construction of the second Cohen patent, which shows how the heating element is moved into engagement with the springs, and when the springs expand, due to heat, it releases the igniting unit, which is returned, in this case by a spring 37, between a movable part of the igniting unit and the stationary part of the igniting unit. That is, when this igniting unit of the second Cohen patent is in its operative position, the shell—

Q. 13?

A. No. 38, remains stationary and the rest of the igniting unit moves, compressing this spring 37 and charging it, so that when the bimetallic fingers release the contact on the igniting unit, the main portion or some portion of it—all except the sleeve is returned to its normal position.

Q. And it breaks the circuit thereby?

A. To thereby break the circuit, yes.

By the Court:

Q. What holds the stationary part of the igniter when it is in idling position?

A. Just frictional contact between the sleeve 38 and the socket 13. This disclosure does not show it, but in practice there are lanced fingers on the sleeve 38 that would provide sufficient friction. Is that the point, your Honor?

Q. Yes. What is sleeve 38? The socket?

A. No. Sleeve 38 is the shell which surrounds the body portion of the igniting unit that is movable relative to the rest of it. I have a device which substantially has it. This [fol. 51] is the device of The Casco Products Corporation. It is their commercial automatic cigar lighter. I have my fingers on the shell, which is equivalent to the part 38 in the patent. In the idling position there is a flange 39 on the end of the sleeve 38, which strikes against the escutcheon 15 of the holder.

Q. That is what I was wondering about. It is that flange that takes up the compression of the spring?

A. That is correct, yes.

Q. I was wondering if you were relying just on friction.

A. It is the flange. I am sorry. I misunderstood you.

Mr. Byrne: I offer in evidence an animated model of the second Cohen patent and ask that it be marked "Exhibit 18."

(Plaintiff's Exhibit 18: Animated model of second Cohen patent.)

Mr. Byrne: I will also offer in evidence the cigar lighter referred to by the witness—the Casco automatic cigar lighter—and ask that it be marked "Plaintiff's Exhibit 19."

(Plaintiff's Exhibit 19: Casco automatic cigar lighter.)

Mr. Byrne: I will also offer in evidence the enlarged drawing of this second Cohen and ask that it be marked "Exhibit 20."

(Plaintiff's Exhibit 20: Enlarged drawing of second Cohen patent.)

The Witness: When the igniting unit in the second patent is moved into its operative or working position, it passes by the inwardly projecting portion at the ends of the contact fingers 22. As a result of that the tendency of the spring 37 to move the igniting unit outwardly of the [fol. 52] holder keeps electrical engagement between the contact 22 and the flange 43. In other words, first they go in with a wiping action. By "they" I mean the flange 43 passes the parts 48-49 of the contact fingers 22 with a wiping action, and then the tendency of the spring 37 to move the body of the igniting unit or of the flange 43 outwardly keeps that in good electrical engagement. That was the feature of this second Cohen patent.

By Mr. Byrne:

Q. Mr. Johnson, is this Exhibit 19 which you had in your hand a few moments ago the device which is made, an exemplification of the device made by the Casco Products Corporation, its automatic lighter?

A. In essence it is. There are many refinements and minor structural changes, but in principle of operation it is practically the same.

Q. I spoke particularly with respect to the lighter which you had in your hand, Exhibit 19.

A. I am sorry. Did you refer to that? I misunderstood you. May I have the question?

Q. Please state whether or not Exhibit 19, the Automatic Casco lighter that you have in your hand, is the commercial device of the manufacture of the Casco Products Corporation?

A. It is. It is.

Q. Now, will you please turn to the drawing of the second Cohen patent in suit and state whether or not that shows in general the commercial lighter of Casco Products Corporation?

A. It does, in essence.

Mr. Allyn: If your Honor please, is that a matter of proof or of opinion? He has already stated there are many differences.

[fol. 53] The Court: Refinements, he said, I think. It is admissible. It is perhaps a matter of opinion, but it is an opinion of an expert. He is subject to cross examination, so that if you wish to bring out any distinctions, that is possible.

By Mr. Byrne:

Q. Did you complete your answer to that question, Mr. Johnson?

The Court: He said, "essentially, yes."

The Witness: Essentially yes, except for minor changes in refinements.

By Mr. Byrne:

Q. Yes. Are you familiar with the device of the defendant involved in this case?

A. I am.

Q. Have you a drawing of it and an animated model of it?

A. Yes, sir.

Q. Will you please explain the device of the defendant here involved, and in that connection you may utilize colored drawings. By the way, Mr. Johnson, before you start on my first question, is this device which I tender to you, which is Plaintiff's Exhibit 2, the device of the defendant which is here involved?

A. Yes, sir.

Mr. Byrne: If you care to see that, your Honor.

(Mr. Byrne handed exhibit to the Court.)

By Mr. Byrne:

Q. Now, will you proceed with your explanation of this device, Mr. Johnson?

A. I have an animated drawing of this device which is [fol. 54] rather difficult to examine because many of the parts are contained within the interior of the igniting unit. I think it will be very helpful in understanding the construction.

This cigar lighter is a wireless cigar lighter. It has a removable igniting unit shown at the right, exhibit—

The Court: Let us get this marked so the record will show from what he is talking.

Mr. Byrne: I offer in evidence the enlarged drawing of Exhibit 1-A and ask that it be marked.

Clerk Stevens: Exhibit 21, 20 was the chart before.

Mr. Huxley: 20 or 21 is that?

Clerk Stevens: 21.

(Plaintiff's Exhibit 21: Enlarged drawing of Exhibit 1-A.)

By Mr. Byrne:

Q. Will you proceed, Mr. Johnson?

A. This is a wireless cigar lighter and has a removable igniting unit shown at the right-hand side of Exhibit 21, and a holding device shown at the left-hand side of Exhibit 21. The igniting unit has a heating resistance coil 27 mounted within a cup 28, and mounted on a post 25, to which the inner convolution of the resistance coil is connected. The post 25 is carried by a spider-like plate 24, which has a cylindrical portion or sleeve 23. This sleeve carries an insulating sleeve 18. Sliding within the sleeves 18 and 23 is another sleeve 19, which extends from the inner end of the sleeve 23 back into the cavity within the sleeve, and at its outer end is fastened to a stud 21 which is covered with insulation 21-a, and on which the knob 22 is mounted.

There is relative movement between the inner sleeve 19, [fol. 55] stud 21 and handle 22, and the outer sleeves 23 and 18, spider plate 24, post 25, and the cup 28 carrying the resistance 27. The animated model will show that relative movement.

I am taking the igniting unit out of the holding device, and by pushing on the igniting unit at one end and on the heating element at the other end, you can see the relative movement between the parts.

The spider 24 is made that way, that is, with arms, and extends through holes in the sleeve 19, because they want to fasten the inside parts to the outside parts, and they have to have spider legs like that going through these holes in the sleeve.

The important thing is that part of the igniting unit stays stationary and part of it moves, and between these two parts we have the spring which is put under tension or charged, the spring being marked 34 in Exhibit 1-A and Exhibit 21.

Mr. Byrne: I offer in evidence the animated model of the defendant's device just referred to by the witness, and ask that it be marked.

Clerk Stevens: Exhibit 22.

Mr. Byrne: Plaintiff's Exhibit 22.

(Plaintiff's Exhibit 22: Animated model of the defendant's device.)

The Witness: The holding device in Exhibit 21 comprises a socket 10 which is a cylindrical socket and which may be inserted through a hole in a dashboard and which has a clamping member around the outside which is applied from the back of the socket to hold it in place.

Within the socket there are three stationary fingers 17, forming abutments for a purpose which I will explain in a [fol. 56] moment. They may be considered as the ground contacts of the holding device. The live contacts are constituted by the bimetallic spring finger contacts and latches 16, which are fastened in place by a stud 12 connected by a wire 13 to the source of current.

When the igniting unit is in its idling position shown on this chart of Exhibit 1-B.

Mr. Byrne (Interrupting): I offer the chart referred to by the witness and ask that it be marked Plaintiff's Exhibit 23.

(Plaintiff's Exhibit 23: Chart of defendant's device.)

A. (Continuing:) The cup 28 containing the resistance wire 27 is in approximate engagement with the contact fingers 17. That is, they may have physical engagement there. They just touch. And at the same time a flange 35

on the sleeve 19 on the igniting unit is spaced from the contact fingers 15 on the holder, so that the circuit is open between those two contacts.

When the igniting unit is pushed into closed circuit position—can you see that, your Honor?

The Court: Yes.

A. (Continuing:) When the igniting unit is pushed to closed circuit—when you want to use the cigar lighter, you push in on the knob 22 thereby moving the sleeve 19 with its flange 35 inwardly, bringing the flange 35 into engagement with the ends of contact springs 16, which are shaped so as to latch over the flange and hold it in that position against the tension of the spring 34, which has then been increased by the compression of the spring.

During this operation the sleeve 23 and the sleeve 18 remain stationary because these two parts are connected [fol. 57] through the post 25 to the heating element cup—and when pressure is brought on these parts 25 and 28 by the tensioning of the spring, the cup 28 is forced positively, or rather forced forcefully, against the contacts 17 in the base. The cup cannot go any further, and therefore the sleeve 19 with its flange 35 is brought under the contact fingers 16.

The parts remain in this position until heat from the resistance, igniting resistance 27, impinges upon the bimetallic contact latch fingers, performing the three functions again of contacts, latches and thermostatic action. The detaining action of these fingers 16 decreases, permitting the spring 34 to overcome the detaining action and move the movable parts of the igniter to open circuit position.

By the Court:

Q. I do not understand why, in that drawing, the end of the bimetallic contact finger appears to penetrate the sleeve.

A. Penetrate?

Mr. Byrne: Go through here.

Mr. Huxley: Slot.

A. (Continuing:) It may or may not, your Honor. That may be a draftsman's error. I would like to see the device, if I may, and I could tell you if that was correct.

(The witness referred to exhibit.)

When that drawing was made, it was made on small-scale and when you enlarge it, a little thing like that may be of importance. It seems to penetrate it on the device.

[fol. 58] By the Court:

Q. I thought it was a solid cylindrical shell. Is it perforated?

A. It is perforated, yes, sir. There are little windows there to keep it from touching. If it expanded out and touched the side wall, of course you would shortcircuit across there.

Q. Yes.

A. I think the drawing is accurate. It looks like in the actual device it sticks out through the window just a little bit.

Mr. Byrne: I offer in evidence the enlarged drawing of Exhibit 1-C, and ask that it be marked Plaintiff's Exhibit 24.

(Plaintiff's Exhibit 24: Enlarged drawing of Exhibit 1-C.)

Mr. Byrne: We will have to get them officially marked a little later.

By the Court:

Q. What holds the heating cup in contact with the lugs or abutments of the socket?

A. In the heating-up period?

Q. Yes.

A. The reaction of the spring 34. Because by holding the flange 35 on the inner sleeve 19 against pulling out, the action of the spring reverts through here, through the post 25, and cup 28, and presses the cup 28 into engagement with the abutments 19.

Q. Does that leave the spring with any function whereby it holds a sure contact between the bimetallic fingers and the——

A. Yes.

Q. (Continuing:) —Heating element cup?

A. Yes, your Honor.

Q. Can the spring have the double function?

A. This spring. Yes, sir. Because flange 35 is trying to [fol. 59] escape from under that bent-down end of the bime-

tallic spring. The flange 35 is trying to go to the right under the influence of this spring, forcing the heating element to the left. The animated model, I believe, shows that.

Q. I see it.

A. Besides what I have described, the defendant's device has on the sleeve 18, which is this insulating sleeve, an annular groove, and that annular groove is engaged by a spring detent on the well to hold the igniting unit in the socket against causal movement, against accidentally falling out in the idle position.

By Mr. Byrne:

Q. Does that appear in the animated model, Mr. Johnson?

A. Yes. That detent is represented by a long piece of brass engaging a notch in the part representing the sleeve 18.

By the Court:

Q. Point it out to me on the model, will you?

A. The annular groove is this groove here in the light bakelite piece, and that is engaged by this tongue on the shell or socket. When you push that in it simply holds it in against rattling out. There has to be something. It is represented here, your Honor, in this animated model.

In this animated model, this notch represents the annular groove, and this piece of brass represents the tongue in the well or the socket.

By Mr. Byrne:

Q. The device of the defendant shown on Exhibits 21 23 and 24, these enlarged drawings, is intended to go through the dash of an automobile, is it not, Mr. Johnson?

A. Yes, sir.

[fol. 60] Q. And to be in close compass. That is to say, it is one of those modern devices that has to be made small.

A. All of the parts are made so that they will fit within the standard hole in the dashboard.

Q. And they are made in alignment? The parts are made in alignment?

A. The parts are in co-axial alignment. The bimetallic combined contact and catch is in axial alignment with the

heating element and plug, and it is located in close proximity to it.

Q. Yes. So that in the operation of this device you merely push the unit inwardly to effect the closing of the circuit by gripping of the parts which you mentioned a moment ago?

Mr. Allyn: I object to the form of that question.

The Court: Overruled.

The Witness: May I have the question?

(The last question was read.)

A. That is correct.

By the Court:

Q. In idling position, as I understand it, there is not even a one-point contact.

A. Well, your Honor, that is a debatable subject.

Q. Well, I do not want to get into any debates.

A. The yellow cup 28.

By Mr. Byrne:

Q. Exhibit 23.

A. As in Exhibit 23, may or may not—I have tried it. I have put a battery and a buzzer across, and sometimes they touch well enough to pass a current and sometimes they do not. The essential thing is, though, that when it is pushed in they do.

[fol. 61] Q. That is to say, when they are pushed in for the purpose of closing the circuit?

A. No. What I mean is when you push in on the igniting unit and bring the flange 35 under the bimetallic contact spring 16, then you have good electrical engagement between the cup 28 and the lugs or abutments 17, through the reaction of the spring 34.

Q. Mr. Johnson, have you an enlarged colored drawing of the device of the Casco Products Corporation?

A. Yes, I have here an enlarged drawing of the commercial Casco Automatic Wireless Cigar Lighter.

Q. Such as is exemplified by the Exhibit 19, which you saw a few moments ago?

A. Yes, sir.

Mr. Byrne: I offer in evidence the enlarged drawing last referred to by the witness and ask that it be marked Plaintiff's Exhibit 25.

(Plaintiff's Exhibit 25: Enlarged drawing of commercial Casco Automatic Wireless Cigar Lighter.)

By Mr. Byrne:

Q. Will you please explain briefly the operation of the device of Exhibit 25 and Exhibit 19?

A. This is the same as the second Cohen patent, except that, for instance, one difference being the specific shape of the bimetallic combined contact and latch, the little different way in which the latch and current-supplying stud is insulated from the base, different kind of clamp for holding it onto the instrument board, and different kind of sleeve corresponding to the sleeve 38 of the second Cohen patent.

The circuit is closed in the same way by pushing in on the handle of the igniting unit to bring the ferrule or flange around the resistance wire in engagement with the bimetallic fingers. The tendency of the spring to push the parts back [fol. 62] maintains the good electrical engagement between the contact fingers and the flange. The outer sleeve, semi-stationary sleeve you might call it—has a flange which engages the escutcheon of the socket. I would say it was, except for minor details which are troublesome from an engineering point of view, to arrive at, it is substantially the same as the second Cohen patent.

By the Court:

Q. The second or first Cohen?

A. The second Cohen patent.

By Mr. Byrne:

Q. Mr. Johnson, during the course of your testimony you have used the term, "wireless lighter." Will you please state what a wireless lighter is?

A. A wireless lighter: the word "wireless" is a convenient term to use as defining a type of cigar lighter in which there is a heating element which is brought to incandescence in a holder and then bodily removed completely, electrically and mechanically, to apply to the end of the cigarette, the heating resistance having sufficient mass to hold the heat

during the time you take it from the socket and apply it to the cigarette.

Q. I have heard the expression, "cordless lighter," used in connection with this case. Would you say that "cordless lighter" means the same as "wireless lighter"?

A. They are synonyms.

Mr. Byrne: You may cross examine, Mr. Allyn.

[fol. 63] Cross-examination.

By Mr. Allyn:

Q. Mr. Johnson, you stated that this Exhibit 25 shows, in your opinion, what is substantially the same as the so-called No. 2 Cohen patent?

A. Yes, sir, in essence.

Q. I didn't get the last part.

A. In essence.

Q. In this Exhibit 25, form of lighter, what holds the outer sleeve which had the number 38 corresponding to it in the patent, I believe? What holds that sleeve in the socket?

A. In the form shown in that drawing, a series of lanced tongues around the periphery of the sleeve.

Q. Is that the way they are made now by the Casco Company?

A. Yes, sir.

Q. Are you sure of that?

A. If I understand your description, I am sure of it.

Q. Do you recognize what I am showing you now?

A. Yes, sir.

Q. Is that the same as shown on this drawing?

A. It is intended to be. The drawing is intended to be a showing of this. This drawing differs in that particular from the exhibit—

Mr. Byrne: 19.

A. (Continuing.)—Casco device. Here. Exhibit 19, in which there are only three of these tongues. And in the device you just handed me, oh, I should judge there might be 25 of the tongues or twenty of the tongues.

By Mr. Allyn:

Q. What is the object of having the increased number?

A. Oh, smoothness of operation, greater tolerances in the manufacture of the shells. The shells can be off. In

[fol. 64] relation to one another, they can be off a little more than they could with that construction.

Q. Won't you please show the Court how the plug is inserted in Exhibit 19, the normal way? I will hold on to the socket. I will be the dashboard.

A. We have one there.

Q. Never mind. I would like to have this. This is your exhibit. And show the Court what happens when you push it in. Now, you have pushed the plug in and the igniter has locked with the latches, hasn't it?

A. Mr. Allyn, the difficulty was I pushed once and I cannot feel. I would like to have it on a solid thing. You yielded.

Q. All right. Try the other one.

A. At the first push you yielded, and the second I could not tell how far it was.

By the Court:

Q. Why don't you do it right on the bench?

A. This is mounted on a solid substance representing a dashboard. You take the igniting unit in your finger that way, and you can reach over as I do, reach over like that and put it right in. You can do it without reaching over and put it in, and it didn't go into closed-circuit position.

By Mr. Allyn:

Q. That one didn't happen to.

A. That one didn't happen to, and it might happen or it might not. If it does stay in, it will simply come out when it gets hot and that is all there is to it.

Q. Why is it necessary to have such a strong spring in that sleeve?

A. I do not understand your question. Such a strong spring?

[fol. 65] Q. Why is it necessary to have this split type of outer sleeve made so strong?

A. Well, simply so that it won't fall out inadvertently.

Q. So that it won't jump out?

A. I wouldn't say "jump" out; wouldn't fall out inadvertently, because if it fell out there wouldn't be any problem about jumping out.

Q. Don't they jump out at times?

A. I have never had one jump out, when I have operated, and I have been using it since 1936 on my car.

Q. Why did they make the change in construction from the one like Exhibit 19 having three tongues, and the other one, which you say they are now making, that has perhaps 20 or more?

A. My only—

Mr. Huxley: I object to that question on the ground of immateriality. It is quite obvious it is a mere mechanical variation. It is not getting us anywhere.

The Court: I do not see the purpose of it.

Mr. Allyn: I could amplify it, but I would prefer to have the witness answer.

The Court: I thought he had pretty well covered it. Increased tolerance, smoothness of operation. Is there anything else?

The Witness: That is all I know of.

By Mr. Allyn:

Q. Isn't it highly important to prevent that plug from jumping out?

A. I should say it would be. Yes, I would consider it highly important to prevent the plug from jumping out.

Q. Absolutely necessary to prevent it from jumping out, [fol. 66] commercially?

A. You mean in its normal operation? Yes, I would say so.

Q. Is there anything in this patent that you say you understand, No. 2 Cohen patent, that says anything about that?

A. About jumping out?

Q. Yes.

A. I don't know. I doubt whether there is anything in about that. The one thing that I think should be made clear in that connection is that sometimes these are used in a vertical position, and gravity itself would keep it in.

Q. Was there anything said about it in the patent?

A. I don't recall it, Mr. Allyn.

Q. You prosecuted the patent?

A. I did, yes, I don't recall it.

Q. And you have studied the patent just before coming on the stand?

A. Well, I didn't study it line for line. I will be glad to look at it and see, if there is any question you want me to answer.

Q. No, if your recollection is——

A. (Interrupting.) My recollection is that there is nothing. My recollection—well——

Q. You have no recollection?

A. I have a recollection of the same point having been brought up before, and I investigated it.

Q. And you couldn't find anything in the patent?

A. I don't recall finding anything in the patent about that.

Q. Now, in the patent, what takes up the thrust of the spring 37?

The Court: What patent?

By Mr. Allyn:

Q. In the second Cohen patent.

A. Second patent.

Q. What takes up the thrust of the spring 37?

[fol. 67] A. The thrust of the spring 37 is taken against the inwardly extending flange on the sleeve 38, and that is transmitted to the flange 39 engaging the escutcheon.

By Mr. Allyn:

Q. Where is the other end of the spring pressed?

A. Against the knob.

Q. Against the knob?

A. Yes.

Q. Is that the case in this Exhibit 25?

A. No. It does not engage directly against the knob of Exhibit 25, no. There is a flange on the igniting unit, flange a on the igniting unit, which is screwed into place, which is held in place, by a sleeve B; so that the whole assembly can be complete, less the knob, because one manufacturer wants a knob of one kind and another manufacturer wants a knob of another kind.

Q. It is absolutely necessary to make the knob detachable so that it can be conformed to the design of a car manufacturer?

A. It was not necessary in the beginning.

Q. I am talking about present commercial practice.

A. Today? Yes.

Q. Do you find anything about that in the patent?

A. No. In the second Cohen patent?

Q. In the second Cohen patent.

A. No.

Q. In the second Cohen patent there is a large member having two arms marked 22; is that correct?

A. That is right.

Q. And when you thrust the plug in, the rim 43 of the igniter engages into the recesses 49 of those fingers; is that correct?

A. That is correct.

Q. And the thrust is taken up then by the part marked 47 on this Exhibit No. 20; is that right?

A. That is right. The manual thrust, you mean?

[fol. 68] Q. The manual thrust, right.

A. A manually-applied thrust. That is correct.

Q. Now, the shape of that device in the Exhibit 25 is very different from the shape in the patent, No. 2 Cohen, is it not?

A. It is different.

Q. And between the fingers in Exhibit 25 and in the Plaintiff's Exhibit 19, there are three abutments, are there not?

A. Yes, sir.

Q. Is there anything of that sort in the Cohen No. 2 patent?

A. Yes, the equivalent of that is here. In the second Cohen patent the arms of the fingers 22 come out and make a sharp bend, and then they go around at the part marked 49, around and inwardly, and then they go out at the part marked 48. These three fingers that are in the Exhibit 19 are intended for use to reclose the circuit, if you want to get a second light before the bimetallic fingers have a chance to cool off sufficiently; to go in there and push it in, and that closes the circuit. These radial parts, you might call them, of the fingers 22 perform that same function.

Q. In other words, if you hold the plug in you can retain the current on as long as you like?

A. That is correct.

Q. And what will happen if you retain the thing pressed in by hand?

A. Well, you will probably burn your finger, the first thing that happens.

Q. And then?

A. Then, if you are insensible to the heat, why, you may burn up the car.

Q. In the second Cohen patent, normally the rim of the member 45 doesn't engage the socket 13; is that not correct?

A. I believe that is the way it is described in the Cohen patent, yes. I believe that is right. It wouldn't matter whether it did or it did not.

Q. Well, as a matter of fact, both sides of the circuit [fol. 69] in the plug of the Cohen No. 2 patent, both sides of the circuit are open?

A. As described, that would be correct.

Q. As shown?

A. Yes.

Q. And described?

A. Yes.

Q. And you close the circuit by thrusting the plug inwardly so that the rim of 45 engages the tongue 50 at the same time that the rim 43 of the igniter cup snaps into the recesses 49; is that right?

A. I don't know if it is exactly the same time. It could be.

Q. When the circuit opens there is a double break, is there?

A. Yes. As described, it is a double break.

Q. And that is true, is it not, in the commercial Casco lighter, Exhibit 19?

A. I don't know about that.

(Witness refers to exhibit.)

I would say that was one of those debatable things, like I spoke about the contacts in the defendant's device. Whether it touched there or not does not make a particle of difference. It might and it might not. It depends on how this tongue was pushed down, in the first place, and whether this bakelite piece was a little over-size or a little under-size. It is quite immaterial whether that happens together or not, or whether that touches before or does not touch before.

Q. With this Exhibit 19, isn't it a fact that when the plug is in the open-circuit position the spring fingers corresponding to 50 are not in contact with any part of the plug?

A. I wouldn't want to say yes or no on that, Mr. Allyn, because it may be touching on that. It may not. I don't

know. I never tried to find out, because it does not make any difference whether it touches or does not. I could not tell you whether it does or not.

Q. When the plug of this No. 2 Cohen is put in closed- [fol. 70] circuit position and then released, the release action is due to the heat of radiation, convection and conduction from the igniter coil, and its rim, in direct contact with the latches of the thermostatic element; is that correct?

A. That is correct.

Q. And is that true in the commercial Exhibit 19, device of Casco?

A. Yes, sir.

The Court: Shall we take our noon recess? Recess till 2 o'clock.

Mr. Huxley: On that point about the introduction of the record of the Sinko case, possibly it might be of assistance to look at this case, the Mast Ffos case.

The Court: I will be glad to take it with me.

Mr. Huxley: And I would like to speak just a moment about it when we convene.

(At 1 P. M. a recess was taken until 2 P. M.)

ARTHUR A. JOHNSON, a witness called on behalf of the plaintiff, resumed the stand and testified further as follows:

Cross-examination continued.

By Mr. Allyn:

Q. I think you said that in your opinion the Casco lighter, Exhibit 19, was a substantial embodiment of the construction of the Cohen patent, Cohen No. 1 patent.

A. No. 2 patent.

Q. I beg your pardon. No. 2 patent. Is that right?

A. In essence, yes.

[fol. 71] Q. What kind of bimetallic metal is employed in that Cohen patent?

A. I don't know who supplied it. Bimetallic metal? It is just bimetallic metal.

Q. Do you know the difference between high temperature and low temperature bimetal?

A. I suppose there is. I know there is such a difference. But that was not defined there as high or low or anything else. Just bimetal.

Q. Just bimetal, in the patent?

A. In the patent.

Q. There is no disclosure of what type shall be used?

A. No.

Q. I think you said that heat from the coil was transmitted directly from the igniter unit in this Cohen patent to the thermostatic latch?

A. I said it was by radiation, convection and conduction. I answered your question.

Q. By direct contact?

A. The conduction is by direct contact.

Q. Yes.

A. With the shell of the heating element.

Q. You mean the rim of the igniter coil?

A. No. The little ferrule within which the igniter coil is mounted.

Q. Now, do you know of any commercial automatic lighter that does not have a latch to hold the parts in the closed-circuit position?

A. No, I do not.

Q. Would it work without a latch?

A. I know of constructions that will work without latches, yes.

Q. Do you know anything on the market that will work without a latch?

A. I said no. There is nothing on the market without a latch, but I know of some constructions. An invention I made does not have a latch.

Q. You mean the buckling spring?

A. No, it is not exactly buckling spring.

Q. Do you know of any commercial automatic that does not have a spring?

A. No.

Q. Could one exist without a spring?

A. Yes. "Could one," you say?

[fol. 72] Q. Yes.

A. Yes.

Q. What would that be like?

A. Well, it might have some expansible member that increased its length when it was heated up, and that would

actually physically do the moving, rather than permit it to move.

Q. Open the circuit, in other words?

A. That is right.

Q. Do you know of any automatic lighter that does not employ a thermostatic element?

A. May I have that question?

(The last question was read.)

I know of some constructions that do not have a thermostatic element, yes.

Q. Anything on the market?

A. No.

Q. In this Cohen No. 1 patent, Exhibit 15, did you state how heat from the igniter was transmitted to the thermostat?

A. Yes. In this construction the heat from the igniter is transmitted to the thermostat through these metal parts, including the purple contacts 43¹ and stud 77, to the bi-metal parts.

Q. It practically all goes through stud 77, isn't that true?

A. Yes, that is true in that construction.

Q. You refer to Exhibit 17 as a non-automatic, I believe (handing an object to the witness).

A. Yes, sir, a non-automatic wireless lighter.

Q. That was the type made by Casco?

A. Yes.

Q. In 1921 or 1922?

A. No.

Q. 1931 or 1932?

A. Yes, 1931 or 1932; anywhere in there.

Q. Prior to the filing of the two Cohen patents in suit?

A. Yes, sir.

Q. Does that plug in Exhibit 17 differ materially from [fol. 73] the plug shown in the first Cohen patent in suit?

A. No, sir.

Q. You used the term "Live" or "hot" contact in referring to one of the devices. Does it make any difference which side of the switch is grounded, from a practical standpoint?

A. No, I should say not.

Q. That hot or live contact doesn't have anything to do with the temperature of the contact, does it?

A. Oh, no. I used that term because I read Judge Hincks' decision wherein he mentioned the hot contact, and I thought he would understand it better.

Q. I wanted to make sure that we all understood the same thing. It is a bit misleading. It has been to me to hear the term, but I think it is clear.

A. I call it a live contact.

Q. I want it clearly understood that that had nothing to do with the temperature of the contact, that was all.

Now, in this Mead situation you have referred to some samples that you tested. I think this plaintiff's Exhibit No. 7 in the Sinko case was referred to as similar to another.

Mr. Huxley: Similar to Exhibit 12 in the present case.

By Mr. Allyn:

Q. To No. 12. Am I correct (handing an object to the witness)?

A. Yes, sir.

Q. In neither of these devices is there a spring in the bottom of the socket, is that correct?

A. That is correct.

Q. And it really is a spiral spring within the casing surrounding the socket?

A. That is correct.

Q. Is there anything in the patent to Mead which shows a spiral around the base of the socket?

A. No, it is shown inside the tube or socket in the Mead [fol. 74] patent. In the sheet 2 construction there is a spring outside the socket, but that is not a bimetallic spring.

Q. You never saw a device like that sheet 2 of Mead's, did you?

A. I can't recall having seen anything like that in that regard—in that connection.

Q. Now, in this Mead patent and in this Exhibit No. 12 would you say that the spring was coaxial with the socket and the plug?

A. Yes.

Q. In the model Exhibit No. 22 would you say that the thermostatic exemplification was coaxial with the plug?

A. Well, that is in a flat plane. You can't talk about things being coaxial there. In the device of which that is a representation it is my opinion that it is coaxial.

Q. Would it be coaxial with one spring like that?

A. It would hardly be coaxial with one spring.

Q. In other words, you have to have two springs?

A. Yes. That is lopsided.

Q. No one would think of putting a single spring on one side, would they?

A. I don't know what they would think of.

Q. I mean commercially?

A. No, not commercially.

Q. The natural thing would be for a person to put one on each side in order to have balanced pressure, is that right?

A. You might have three.

Q. Two or three. Do you know what kind of bimetallic metal is employed in these alleged models of the Mead device?

A. You mean whether the high temperature or low temperature?

Q. Yes.

A. No, I don't know. All I know is that they work.

Q. What effect did it have to place the spring in the Mead device on the outside as distinguished from the inside of the socket, as shown in Exhibit 13?

[fol. 75] A. Well, I would say that the putting of the spring on the outside made it less critical in operation and avoided a tendency for the spring to anneal. If you use a spring in a situation that is so close to the heat that you find it is going to anneal, why, we would move it a little further away. By annealing I mean annealing to the point where it lost its tension.

Q. In other words, it is liable to be damaged in the bottom, where it would not be so likely to be damaged around the outside?

A. I would say that the likelihood would be greater when it was in the bottom, unless you had a metal—You might have a metal on the outside that would be damaged quicker than a better metal on the inside. It is all a matter of cut and try until you get the right bimetal for the purpose.

Q. Is this a matter of experiment?

A. Cut and try, I would say.

Q. In the forms of the Mead device that you have seen did any of them use bimetal in the member which is known as the latch?

A. You mean as made by Mead?

Q. These so-called Mead devices of Exhibit 12 and 13.

A. No, I tried to examine them. I couldn't tell whether it was bimetal or not. I believe it is not bimetal in the latch. It is not bimetal in the patent.

Q. That latch and the holder for the latch are quite a distance from the rear, are they not?

A. They are.

Q. As shown in the patent?

A. They are.

Q. And it would require a considerable amount of heat to affect the thermostat in that location?

A. If you used the bimetal in that location as you would use down in the well, yes, but if you had a more sensitive bimetal up there, why, it would operate the same. It is just a matter of how sensitive the bimetal is.

Q. Do you find anything in reference to that in the Mead patent?

A. In reference to what?

[fol. 76] Q. The character of the bimetal.

A. No. No.

Q. You refer to the defendant's structure and seem to have some question in your mind as to whether or not the rim of the igniter unit normally engaged the stationary abutments in the socket. Is that correct?

A. Yes, I stated that.

Q. When you insert the plug of the Cuno lighter into its socket, the natural thing to do is push it in until the igniter strikes the abutments, isn't that correct?

A. I would say that may be correct, but you have that detent action there and that would locate the position of the igniter whether you pushed it in all the way or not.

Q. That is, the spring detent such as is shown on Exhibit 22?

A. By a long piece of brass.

Q. Yes, Mr. Johnson has substituted a long brass latch for the particular form shown in the sample.

A. For the tongue.

Q. For the tongue in the Cuno socket. That detent engages in the groove in the insulating sleeve?

A. That is correct.

Q. And the purpose of that is to hold the sleeve in the socket isn't it?

A. Removably hold it in the socket, that is right.

Q. To prevent it from jumping out when the circuit is open?

A. No, I don't see anything that would make it jump out when the circuit opens, but it holds it in against whatever might tend to move it out.

Q. You mean that you don't see that there is anything here that would tend to make the plug jump out of the socket when the circuit opens?

A. Yes, there might be a tendency, because this flange 35, I believe it is, would strike the sleeve 23. Yes, there would be a tendency.

Q. Then that detent spring engaging in the groove in the insulating sleeve would prevent it from jumping out?

A. Yes, if it had a tendency and if it really did, it would [fol. 77] prevent it. For instance, what I have tried to get at is this: If you hold this thing vertical—Sometimes these are mounted at the back seat of the car, and then it would be in a vertical position rather than a horizontal position, and then it would not jump out under any circumstances I can imagine.

Q. They would have to be made so that they could be put in any position?

A. Yes, I should say that that was right, but a device would be perfectly satisfactory without that detent if you were only going to mount it vertically.

Q. That would depend upon how heavy the parts were with respect to the spring, wouldn't it?

A. I can't imagine it jumping out regardless.

Q. You cannot? Do you recognize what I am showing you now?

A. Yes, that is a Casco lighter like Exhibit 19.

Q. You think there is no particular danger of that jumping out?

A. When it is in a vertical position—when it is upright. I did not say it wouldn't jump out.

Q. That would depend upon the adjustment between the springs in the latch fingers and in the ejecting spring, would it not?

A. I would say that that was right.

Q. This is one of the plaintiff's lighters isn't it (handing an object to the witness)?

A. It was.

Q. Well, isn't it?

A. I don't know what has happened to it or whether anything has happened to it.

Q. Examine it. See if anything has happened to it.

A. I can't tell whether anything has happened to it. It looks like the ends of these little tongues that are supposed to frictionally hold the igniter in the socket have been burnished off a little.

Q. Do you see any sign of a burnishing tool on that?

A. I certainly do. I see signs of a great deal of wear or a burnishing tool of some kind.

Q. Then, the wear of the socket does have an effect on [fol. 78] the spring fingers?

A. The wear would have the same effect as burnishing it; certainly. I never saw one of Casco's lighters operate like that.

Q. You never saw one as bad as that?

A. No, I never saw one as bad as that.

Mr. Allyn: I should like to offer it in evidence or for identification.

The Court: Mark it for identification.

Mr. Byrne: We object to that.

The Court: He is just having it marked for identification.

(Defendant's Exhibit A for Identification: Casco lighter like Exhibit 19.)

By Mr. Allyn:

Q. If these spring fingers wore down, as you think they have in this sample, that would be a natural result, wouldn't it?

A. Yes, sir.

Q. When you referred to element 24 on Plaintiff's Exhibit 21 I didn't understand whether you said 24 was a spider or a fiber.

A. A spider.

Q. A spider?

A. A spider. It may be a bad name for it, but it has three legs. It is spider-like in form. It has three legs that go in from the inside to the outside.

Mr. Allyn: I couldn't understand the word that was used.

Mr. Byrne: We adopted it from your office, Mr. Allyn.

Mr. Allyn: Thank you for the help.

Mr. Byrne: Mr. Johns told me; he referred to that in my presence.

Mr. Allyn: We don't deny it is a spider.

[fol. 79] By Mr. Allyn:

Q. Go back for a moment to that Exhibit 20 showing the construction of the second Cohen patent. I understand that the idea is when the device has been heated the latch fingers 47 will be in the position of Figure 3; is that correct; after heating?

A. Oh, I do not know. I would not say that. You could not show the position before and after heating. You have to go by the description there. They look as though they had expanded out a little bit with relation to Fig. 2, but no attempt was made to show the position after heating, to the exact position, I mean.

Q. After it had been heated the arm would bend out?

A. That is right.

Q. In order to release?

A. That is right.

Q. And if you re-heated it by holding the plug in?

A. Yes.

Q. It would bend out still further, wouldn't it?

A. Yes.

Q. Continue to bend, would it not?

A. Yes.

Q. Then in that event the main arms 47 would become inclined, would they not?

A. As a matter of fact, I think that some of the bending would take place—most of the bending would take place right in here, anywhere. A tendency would be for this part to which the reference number 47 is applied, to swing out from its junction here.

Q. So that the two opposite arms would spread out from each other?

A. Yes, somewhat.

Q. Then if you continued to push on the plug, the igniter head would tend to spread them mechanically. Would they not?

A. I doubt whether things would last that long. I think that you would probably burn your finger or the resistance wire would burn out by that time.

Q. I think that is probably true. You stated that you remembered seeing a sample of the Mead device in 1929. [fol. 80] I think you said.

A. Yes, sir, '29 or '30. I wouldn't want to be limited to either of those two years. I am quite sure it was '29.

Q. And you prepared the application for the Cohen patents in suit?

A. I did not. This one, I believe, I prepared. The second one I believe I prepared. The first one, my assistant prepared, under my supervision.

Q. Don't you usually supervise rather carefully?

A. Yes, yes.

Q. Do you remember the claim which you put in that original application?

A. No, I do not.

Mr. Byrne: It strikes me, if your Honor please, that this is wholly immaterial and clearly outside the scope of the direct.

Mr. Allyn: I think it is very distinctly pertinent. It relates to the gentleman's memory of what happened in 1929. I think we have documentary evidence that is different from his statement.

The Court: Admitted for that purpose.

By Mr. Allyn:

Q. I show you a bunch of papers. I presume you recognize the character of them.

A. Yes.

Q. Being a certified copy of an application for patent?

A. That is correct.

Q. This purports to be a certified copy of the file wrapper and contents of Cohen patent 2,117,703. This contains this claim.

Mr. Huxley: Pardon me just a minute. That is not one of the patents in suit, is it?

Mr. Allyn: No, it is the parent, alleged to be the parent of the patent in suit, 2,140,311.

The Witness: Yes, the first Cohen patent.

[fol. 81] By Mr. Allyn:

Q. Both of these patents show identically the same construction, Mr. Johnson?

A. The original and the divisional.

Q. Yes.

A. Yes, sir. The divisional omits the signalling.

Q. Omits an illustration of a signal circuit?

A. That is correct, and parts associated with it.

Q. This application as filed, its parent 2,117,703, contains this claim: "In an Electric Cigar Lighter, the combination of a base member, a removable plug supported by said base member, an igniting element on said plug, and a thermostatic catch for locking the plug in the base member until the igniting element is heated a pre-determined extent." Do you recognize that?

A. Yes, sir.

Q. And that claim was asserted when this case was filed, July 23, 1932?

A. That is correct. Yes, sir.

Mr. Byrne: If your Honor please, may this be admitted, subject to my motion to strike, because it has not gone to the point or place yet of attacking the credibility of the witness?

The Court: Very well.

Mr. Allyn: It is attacking the recollection of the witness. I do not mean to impugn any wrong intention on his part.

Mr. Byrne: That was the very theory on which you had it admitted.

Mr. Allyn: At least, to test his recollection.

The Court: Proceed.

Mr. Allyn: I would like to offer that for identification. I am satisfied to have what I read into the record, unless my brother insists on the entire file going in.

Mr. Byrne: I do not insist upon the entire file going in. [fol. 82] On the other hand, I now press my objection and move to strike out all this testimony respecting this matter.

The Court: What bearing has this got, Mr. Allyn?

Mr. Allyn: It shows that in 1932 when this application, the parent of this 2,140,311 was filed, that Mr. Johnson drew a claim for a device which reads word for word on the Mead construction.

The Court: Does it show that Mr. Johnson was the attorney?

Mr. Allyn: That Mr. Johnson was the attorney of record, and he is the President of the plaintiff company.

The Witness: Your Honor, if this tests my memory, may I say something?

Mr. Byrne: I will bring it out.

The Witness: All right.

The Court: Go ahead, Mr. Allyn. What is your claim?

Mr. Allyn: I claim that that shows that there was a strange hiatus in somebody's memory. If he had the device in 1929, of course, they should not have made that claim. If they knew about the Mead device in '29 they should not have made this claim in 1932. And I doubt very much if they had the Mead device in 1929. I do not believe that Mr. Johnson would have knowingly put that claim in there.

Mr. Byrne: If your Honor please, it seems to me that this is rather very, very far fetched. There is no doubt that these devices were extant by that time. It will be proven to your Honor a little later. It was proven in the Sinko case that they were there. But merely because a [fol. 83] claim of a purported scope found its way into an application, can hardly go to the extent of proving that Mr. Johnson was in error when he testified that he saw one of these devices in 1929, he believed. It seems to me the thing is entirely irrelevant, incompetent and immaterial, and I move to strike out all reference to it in the cross-examination of Mr. Johnson.

The Court: It seems to me the objection runs to the weight, rather than the admissibility. I will overrule the objection, and leave it in for what it is worth. Are you content that the reading may stay in the record in lieu of the physical exhibit?

Mr. Byrne: Yes, your Honor.

By Mr. Allyn:

Q. In the second Cohen patent, I think you said that the coil 41 was a heater element, did you not?

A. That is the igniting resistance coil.

Q. Isn't it the heater element?

A. It is the heater that you use to light the cigar with.

Q. In the Cohen patent No. 1 you referred to the desirability of the members of the latch being matched, did you not?

A. No. No, you didn't express that right, if you are talking about matching. Members of the latch being matched?

Q. Yes.

A. No, I never said that.

Q. Didn't you say it was desirable, ordinarily, that the two members of a thermostatic device should be matched to each other?

A. I said this, that the spring, the ejecting spring, and the bimetallic latch should be matched. You see, it was desirable, as I understood it when I made those remarks, it was desirable to have them matched, and we had them matched. We put them out in matched pairs.

[fol. 84] Q. In what?

A. We matched the igniting unit against the holding device, if it was to stay that way.

Q. In other words, so that you would always have the same plug in its socket?

A. That is correct. At that time when those remarks were made, that was the——

Q. The practice?

A. The practice.

Q. And that is the situation, is it, in this second Cohen patent?

A. You have got them—I thought you said this.

Q. No, I am just now saying the second Cohen patent.

A. No they are not matched there.

Q. They are not?

A. No. Oh, I see what you mean. Yes. The way this is constructed, and at the time I made those remarks, it was desirable to keep the igniting unit and holding device matched, because if you had a spring in the igniting unit which was too strong for the bimetal in the holding device it would not operate.

Mr. Byrne: You were referring to Exhibit 20?

The Witness: Yes.

By Mr. Allyn:

Q. Was that the case in this first Cohen patent?

A. No, you don't have to have them matched there. Because in that specific construction of that patent as shown in the drawings, the spring, the ejecting spring 48, is in the holder, and so are the bimetallic fingers.

Q. So that you can use any plug in the socket of that No. 1 Cohen patent?

A. Any plug adapted to fit.

Q. There was no critical relation, in other words, between the plug and the socket?

A. No.

Q. Whereas in the No. 2 Cohen patent there is a much more critical relation between the plug and the socket?

A. Yes, sir; yes, sir; that is correct.

Q. In your application for the Cohen patent No. 2, I find in the record this statement: "Applicant's problem [fol. 85] was to break the energizing circuit, and at the same time to accomplish a striking change of appearance in the combined lighter and socket. This last he accomplishes by throwing the lighter to an abnormally projectant and hence very conspicuous position, and one such as would naturally signal the readiness of the lighter for withdrawal for immediate use." Do you remember that?

A. Yes, sir, I remember that statement.

Q. In this Casco lighter, in Exhibit 19, is that plug in this abnormally projectant position as I show it to you?

A. As you showed it to me?

Q. Yes.

A. No.

Q. It was in the normal position in which it would be when riding in the idling position?

A. No, as a matter of fact, you showed it to me in closed-circuit position.

Q. Closed circuit. All right. Now, it is in its normal idling position?

A. That is right.

Q. Would you call that an abnormally projectant position?

A. Those are not my words, and I would hardly go as strong as that. I had an assistant who was inclined to use strong words. I would say it was a projectant position, sufficient for the purpose to show it is not in. Just looking at it you can see when it is in and when it is out. I should say the projection was enough to be visually important.

Q. There is nothing abnormally projectant about it?

A. I won't take credit for those words.

Q. That plug has two definite positions in the Casco lighter, has it not, the normal one, the open circuit, and then the closed circuit with the plug pushed in; is that right?

A. Yes, sir, exactly as in the second patent. There is no difference. Just anything that might have been said there is only a matter of words.

Q. The same thing is true of both patents?

A. That is right.

[fol. 86] Q. Both Cohen patents?

A. That is right.

Q. You made this statement in one of your file wrapper arguments: "For the further reason that there is no thermostatic element or anything else in Mead for locating the plug in the base member until the igniting unit is heated a pre-determined amount." Do you remember that?

A. Yes, sir.

Q. What did you mean?

A. Well, I meant just what it said. There is nothing in Mead for locking the igniting unit as I understood Mead without seeing, you know, without the device, the actual device in front of me. There is nothing in the Mead patent to lock it in its energized position. You can still pull it out. There is a detent there, or a holding device, that holds it against rotary movement, but there is nothing—as I understood it at the time, this patent of Mead—that would prevent a longitudinal movement of this igniter from the position shown in Fig. 15.

Q. Well, you do not understand they ever sold a device like that Fig. 15, do you, except possibly with the outside casing around it?

A. With outside casing, yes.

Q. It would always be sold with a casing, would it not?

A. Yes. Pardon me. I say those remarks were made with this in mind, rather than with the device with the cover in mind. As a matter of fact, any device with a cover you can still move the igniting unit from that definite position. You can still slide it out even in the on position, slide it out somewhat. You cannot slide it out completely because his key-hole slot, the little slot, would prevent it.

Q. If you slid it out, part way, looking at Sheet 2 of that Mead patent, if you pulled out the plug part way, the pin 75 as shown here in Figure 20, would strike the casing, would it not?

A. Yes, if the slot was not extended. That is, if you let me have the model I can show you what I mean by that.

[fol. 87] Q. Which one is that?

A. 12, I think.

In the Mead drawing, it does not appear that there is any slot in the casing, any short slot in the casing such as you see in Exhibit 12. There is a little V-shaped notch that the pin goes through. In the Mead drawing the whole knob goes into a hole in the casing, as you can see in Fig. 20. If the radius or the outside end of the pin is

no bigger than that knob, why, you can pull the Mead igniter unit directly out from closed-circuit position, and that was my understanding, and that is why I drew that claim in the Cohen case calling for locking the igniter in closed-circuit position.

Q. But it is locked in closed-circuit position in this Exhibit 12; is it not?

A. Yes, in Exhibit 12, it is. And I have drawn a lot of claims that, on second thought, read on prior art that I was well acquainted with, after the examiner called it to our attention. We see that we do that quite often.

The Court: I have that experience with the C. C. A.

(Laughter.)

By Mr. Allyn:

Q. Did you ever see a so-called Mead type lighter where the spiral coil was not thermostatic, the spiral coil spring in the base of the socket?

A. Was not bimetallic.

Q. Bimetal.

A. No. You mean the device purported to be made by Mead or Jessop?

Q. Right.

A. No.

Q. Do you know what the temperature limits are, of operation of these thermostatic lighters?

A. Why, I am not in the Engineering Department, of course, but my understanding is they operate at around 1300 Fahrenheit.

Q. That is the coil, you mean?

A. The coil.

[fol. 88] Q. Heats directly?

A. I have never put a contact pyrometer on. I don't know.

Q. What are the limits of the atmospheric temperature in which they will function?

A. I don't know. I don't think there are any limits, Mr. Allyn, or I don't understand you.

Q. I mean, are they supposed to operate, we will say, from 20 degrees below zero up to 120 Fahrenheit?

A. Oh, yes, yes.

Q. That would be necessary for a practical device?

A. Yes, I would say so. Even lower temperatures than that. It does not matter how far down you go.

Q. Do you know why the Casco licensee brought out the form of the commercial type you have introduced here?

Mr. Byrne: That is objected to as immaterial, irrelevant, and incompetent.

The Court: Sustained.

By Mr. Allyn:

Q. Will you please examine that print and let me know what you think it is?

A. It purports to be a drawing of the Casco commercial lighter.

Q. Well, so far as you know it is a correct delineation of one of the commercial forms of a Casco lighter?

A. Yes, except for minor details this is substantially it.

Mr. Allyn: Well, my reason for suggesting that this be introduced is that my friend hasn't introduced any drawing except a very large one, which is unsuitable for reproduction, and that is the only purpose I have in wanting to have something to which the Court could refer in a handy form.

[fol. 89] Mr. Huxley: There is no objection to it. It seems to be all right. It is subject to any correction, of course?

Mr. Allyn: All right.

(Defendant's Exhibit B: Drawing of Casco commercial lighter.)

By Mr. Allyn:

Q. Will you please examine this print and express your opinion of it?

A. Yes. This is a fair drawing of the Mead cigar lighter. I would like to check it with 12, if you don't mind. (The witness examined an object.) Yes, Plaintiff's Exhibit 12.

Mr. Allyn: I should like to offer that for the purpose of identification. It is a print of one of the forms of the Mead device as offered by my brother. I know nothing about the source of it.

(Defendant's Exhibit C for Identification: Print of one of the forms of the Mead device.)

Mr. Allyn: That is all.

Redirect examination.

By Mr. Byrne:

Q. Mr. Johnson, some question was raised with respect to Exhibit 7 in the Sinko case, which is exemplified by Exhibit 12 in this case. Will you state the circumstances under which you acquired that exhibit from The Casco Company at its laboratory or wherever it was?

A. Before we went on trial in Chicago and I went out to Mr. Huxley's office, I went out to the Casco plant and went to the drawer where they have the cigar lighters, and I took that cigar lighter out and I kept it in my possession separate from anything else. It was the only Mead cigar lighter I had at that time, so when I testified out there I felt absolutely sure that it was the same one we had before us in 1929.

[fol. 90] Q. You had one before you in 1929, you say?

A. Yes.

Q. The question has arisen here as to whether it was in 1929 that you received it. Tell me the circumstances, if any, surrounding the examination of this device in 1929.

A. Well, I believe it was the fall of 1929 or the spring of 1930, Mr. Cuno's company came out with quite a different kind of manual wireless lighter, and Mr. Cohen and I were looking through the devices we had in the museum for another lighter which we thought embodied some of the features of this Cuno lighter, and it was at that time that we ran across and discussed this Mead lighter.

By the Court:

Q. What fixes the date 1929 in your mind?

A. Because that was the year when Mr. Cuno's company came out with that lighter.

Q. What lighter?

A. The one—I haven't quite characterized it. I have a print of it. I think they call it their 1930 model lighter.

By Mr. Byrne:

Q. It was in connection with the coming out of that lighter that you went to the laboratory of Casco and saw this Mead device?

A. Yes, sir. That is correct.

Mr. Byrne: Have you one of those devices here Mr. Allyn?

By Mr. Aliyn:

Q. Wasn't that 1690?

A. I think 1690 is the one.

By Mr. Byrne:

Q. Mr. Johnson, I observed in the Mead patent that there is an enlarged base portion but that in the device like Exhibit 7 and in the Sinko case in Exhibit 12 the ferrule [fol. 91] seems to come straight down and have a spring on the outside of it. What have you to say about the constructions being substantially or not substantially the same?

A. I think it is the same in principle. If you found that the bimetal spring annealed because it was too close to the heating element, you would move it a little further away and put it on the outside of the sleeve instead of inside.

Q. During the time that this claim from a prior application was being read to you on cross-examination you seemed to have in mind some explanation to make at that time. If so, make it now.

A. I think I made the explanation that the claim did not read on the Mead patent, because there was nothing in the Mead patent to lock the igniting unit against being pulled out.

Q. Will you illustrate that feature by reference to Exhibit 7 in the Sinko case, which is the same as Exhibit 12, from which I have removed the casing?

A. I am moving the igniting unit to closed-circuit position, in which it would be held while heating up. If you changed your mind you could pull it straight out without rotating it back.

Q. Now, on cross-examination you were asked the question if you knew of any automatic heater on the market that did not employ a thermostatic element. I think that was the question, was it not?

A. I don't recall. Possibly I didn't get the question.

(The last question was read.)

The Witness: I was asked that question, yes.

Q. And you gave that answer?

A. There are none on the market.

Q. I think I have not made myself very clear, I thought that the substance of your testimony was that there is no

[fol. 92] automatic cigar lighter on the market that does not employ a thermostatic element.

A. Your statement is correct.

Q. Is that a comparatively new venture on the market? That is to say, within the last two or three years?

A. I don't know what you mean.

The Court: He just said that there was no automatic without a thermostatic device.

Mr. Byrne: Yes. Then I asked the next question, if that wasn't comparatively recent.

By Mr. Byrne:

Q. Didn't that come on the market with the Casco device in 1936?

A. The automatic cigar lighter with the thermostat came on the market with, or in, the Casco lighter in 1936, yes.

Q. Of course this was preceded by the Mead device which we have been talking about?

A. Yes.

Q. And was followed, incidentally, by Sinko and by Cuno, the defendant here?

A. Yes.

Q. Are there any others on the market that you know of?

A. There is another.

Q. More than one other?

A. One is all I know of.

Mr. Byrne: I think that is all I have.

Recross-examination.

By Mr. Allyn:

Q. Is this the Cuno device that you referred to as having seen when you hunted and found the Mead device (handing an object to the witness)?

A. Yes, that is the one or something very much like it. Yes, sir, I believe that is it. That is my present recollection anyway.

Q. You mean that you saw it on the market commercially in 1929 or 1930?

A. I don't know whether it was on the market commercially. I know that we had one. How we got it I don't

[fol. 93] know. Sometimes we get them before they are on the market commercially. One of the suppliers must have given it to us.

Q. Would you say that the contacts on the bottom of the socket are coaxial?

A. Yes, sir.

Mr. Allyn: I should like to offer that as a Cuno early lighter. It is one that Mr. Johnson says he recalls having seen prior to finding this alleged Mead device in his collection.

The Witness: That is right.

(Defendant's Exhibit D: Early Cuno lighter.)

Mr. Huxley: That is admittedly non-automatic?

Mr. Allyn: It is not automatic, no.

By Mr. Allyn:

Q. From what you said, Mr. Johnson, I take it you feel that the Mead lighter would have to have some kind of a cover on it in order to be of any use, is that right?

A. No, I wouldn't say that. It depends on where you want to use it and how you want to use it.

Q. What if you wanted to use it on an automobile?

A. Well, I would certainly put a cover on it.

Q. You couldn't sell them unless there was a cover, could you?

A. Hardly.

Mr. Allyn: That is all.

By Mr. Byrne:

Q. Well, Mr. Johnson, would it be operative without a cover?

A. Certainly.

Mr. Byrne: That is all.

The Court: Let us break the afternoon here.

(There was a short recess.)

[fol. 94] Mr. Huxley: Mr. Cohen.

JOSEPH H. COHEN, called as a witness on behalf of the plaintiff, being first duly sworn by Clerk Carroll, testified as follows:

By Clerk Carroll:

Q. Your name and address?

A. Joseph H. Cohen.

Mr. Huxley: If the Court and counsel have no objection, I will ask a few leading questions on matters regarding which there is no dispute.

Direct examination.

By Mr. Huxley:

Q. Your name is Joseph H. Cohen?

A. That is right.

Q. You live at Bridgeport, Connecticut, and you are the President of the Casco Products Corporation?

A. I am.

Q. Which is the licensee under the three patents here in suit. That is correct, is it not?

A. That is right.

Q. And it is also correct, is it not, that about 1922 or 1923 you entered the cigar lighter business, that the type of cigar lighter that you first made was the so-called reel type, that is where the cigar lighter was attached by a cord and coiled up on the reel, and to light the lighter the cord was pulled out and the lighting was performed that way?

A. That is correct.

Q. That was the first type you made?

A. That is correct.

Q. Then beginning about 1927 and 1928, you and your company, the Casco Company, went into the manufacture of the so-called wireless non-automatic manually-operated cigar lighters of which Plaintiff's Exhibit 17, which has [fol. 95] been introduced in evidence, is a typical one. That is correct, is it not?

A. Yes, that is right.

Q. And that manufacture of non-automatic lighters was continued until about 1936, whereupon you went into the manufacture of the automatic wireless type of lighter

which is exemplified, of which a typical one is shown, by Plaintiff's Exhibit 19. That is correct, is it not?

A. That is correct, with the addition that the non-automatic lighter continued to sell after '36.

Q. Yes, and later I will go into the extent of the sales, but just I wanted to get the general picture at present.

Now, Mr. Cohen, you have heard Mr. Johnson's testimony with regard to seeing one of the so-called Mead Cigar Lighters, which was exemplified by the actual original Exhibit 7 in the Sinko case, and Plaintiff's Exhibit 12 in the present case. What is your recollection about that?

A. I recollect very clearly the incident when the Mead Lighter was first called to the attention of Mr. Johnson and myself. We were, at that particular time, looking for lighters through our collection. We have a little department wherein we collect all of the lighters that make their appearance on the market. Our salesmen and customers send them in to us, and if anything new appears we just review them then and put them in this little stow-away, and very often refer to them.

This time we were looking for another matter having to do with a cigar lighter, and in fumbling through and searching for just what we wanted the Mead lighter was then discussed casually, and I remember clearly having stated that one day that would be the way to do it, and it was passed over rather lightly at the time, since it was——

Q. How nearly can you place the date when that incident occurred?

A. I can establish the date, not exactly. But having started the manufacture of the cordless lighter, the wireless, in 1927, we had a very successful period of a number of [fol. 96] years. And particularly, in '28 it attracted so many into this business that we were pretty busy trying to find out where we were at. And I would say that from the best of my recollection, that it was sometime in the winter season of '29, and I can only tie that up with an experience of the movement of lighters and changes, and knowing that it was after a very successful year in which we had more business on a lighter known as the "600" than we could actually supply. And that attracted others into the field, and it necessitated our going through this collection of lighters with the idea of making further improvements. And it was that year that we brought out.

wherein we converted or inverted, rather, the open-face wireless lighter and reversed it so that the heating element would not be unsightly after use.

Q. But concealed as in Exhibit 17?

A. But concealed, and I remember clearly that that was a 1929 creation if I can remember, and it was in that year, I am pretty sure.

Q. Would you say it was within a year or so of that?

A. I would say that my best recollection is that it was in the winter season of 1929.

Q. After you had seen this Mead lighter, what did you do then in regard to lighters?

A. At that particular time, why, I did not think a great deal of the lighter as it was, since I knew we were confined to a very limited space, and it looked like it was an impossibility to introduce the mechanism, as I thought existed. As a matter of fact, I just took it for granted that it was chock full of mechanism as the size indicated, and so I just passed over it. But it was responsible for my striving in the direction of creating an automatic lighter that I knew was very necessary because of the many objections to the manually-operated lighter.

And so I took it to bed with me, so speaking, night after night, and then along in 1931, oh, very nearly a [fol. 97] couple of years later, I actually had some difficulty in falling asleep and couldn't get this automatic lighter out of my mind. And finally it presented itself as if I could pick it up. And I thought I could dismiss the whole thing then, and do it the first thing in the morning. But I still was annoyed with it and finally got up about 3 o'clock in the morning and sketched it, and then went back to bed.

Q. After you had done that, did you cause any of the actual lighters to be made in your factory? I mean in further development of whatever ideas you might have had?

A. The first thing I did was to send for Mr. Johnson the very next morning, with the idea of patenting, filing a patent on what I thought was the greatest thing in the world, and immediately proceeded to make samples. And I could easily produce in this Court a hundred more various types that we made before we actually made a successful lighter.

And then we had another problem of making sure beyond any shadow of doubt that these lighters would be faultless, because we had established what I believed to be an enviable reputation with the car manufacturer, and that was no easy task, and we did not want to do anything that would in any way jeopardize our position with the car manufacturer, that had taken so long to establish.

And so, knowing as I do and did, because of experience, that no new article can be made without some bugs cropping up in it—and I was determined to do that, to actually eliminate the bugs in the lighter. And so a prolonged experimentation was undertaken, and we had actually tested these lighters in our laboratory after making a successful one, to where it would outlive the car. And we have operated innumerable lighters upwards of 26,000 times. And to accomplish that was not easy. And we had tried so many types and shapes of thermostats, and finally got the Precious Metal Company up here in Massachusetts [fol. 98] setts to make some bimetal for us that would act as we wanted it to in our lighter. And I might add that they were successful in doing so and told us this was the first time that a thermostat was used as a mechanical means for holding the component part and acting as a thermostat.

And we have made since then, of course, millions of them.

Q. Now, in the course of your development, did you confer with Mr. Johnson, or what did you do in regard to the patent situation?

A. Well, I thought as I already stated that I had the most wonderful patent in the world——

The Court: Please confine yourself to the question. Read him the question.

The Witness: All right. Will you restate it?

By Mr. Huxley:

Q. I will restate the question. What did you do in regard to the patent situation?

A. Mr. Johnson, who had filed——

The Court: The question is, what did you do?

The Witness: In regard to the patent?

The Court: Yes.

By Mr. Huxley:

Q. With regard to the general patent situation?

A. Well, I turned the matter over to Mr. Johnson, who had filed the patent as he had others before. And my point was——

The Court: The answer is, "You turned it over to Mr. Johnson."

The Witness: That is right.

[fol. 99] By Mr. Huxley:

Q. Did you receive any report from him?

A. I did. He made it known to me that the Mead patent existed, and in his opinion that we were up against a stone wall, in his language, and advised the purchase of the Meade patent.

Q. Was it so purchased?

A. It was.

Q. When was it that this automatic type was put on the market finally?

A. In 1936 was the first time that it was sold.

Q. Will you briefly tell us what contacts you had with the car manufacturers at that time and just prior to putting it on the market?

A. I happened to be in Detroit making some calls with our Mr. Sinciair, and we were at the Packard Motor Car Company at the time—who had had samples of our automatic lighter. And up to that moment there was no request for deliveries of the lighter, and on our way out I remember clearly that we met Mr. Belts, the Chief Engineer, the Body Engineer rather, of the Packard Motor Car Company, and he asked me in these very words, "When are we going to get the automatic lighter?"

I was a little bit embarrassed, because I was with the Purchasing Agent, and up to that time I had no orders. And he let me know then and there he had written the automatic lighter into the specifications, and he was looking forward to us for delivery.

And we, of course, turned back and got an order from Mr. Hittle and proceeded to manufacture the automatic lighter. Up to that time we had not made or sold any.

Q. Had you been soliciting orders up to that time?

A. We had not. We were not quite ready to make it known to the automotive industry as a whole, and felt that if we were to give it to one or two, that we might be considered [fol. 100] as showing partiality, and earn the ill will of some of the manufacturers.

After taking the business at the Packard Motor Car for that year, Mr. Sinclair had disclosed the fact to the Chevrolet Motor Car Company, who also insisted that they must have it for that year. And now we found ourselves with orders for two companies.

And since Chevrolet produced a large quantity, we were reluctant to divulge it to any other car manufacturers for that year, because we knew we could not revolutionize this whole situation in one season.

So we confined our manufacture that year in '36 to Packard and Chevrolet.

Q. At the time when you went into this manufacture, was any additional investment required at your factory to make this automatic type?

A. Considerable, I would say. Up to the present day I would say that our tools and equipment peculiar to the manufacture of automatic lighters, is very near a half a million dollars.

Q. Is that in addition to the equipment that you have to make the non-automatic type?

A. Yes, it is.

Q. What was the comparison between the price at which the automatic lighters sold as compared with the non-automatic type?

A. The differential in price was 10 to 15 cents.

Q. Which sold the higher?

A. Depending upon the construction of the knob and the length of the pig-tail, the amount of wire, and so on and so forth outside of the lighter.

Q. That is, the automatic sold from 10 to 15 cents higher than the non-automatic lighter, is that correct?

A. That is right.

The Court: 10 or 15 cents apiece.

The Witness: That is right.

Mr. Huxley: Higher.

[fol. 101] By Mr. Huxley:

Q. That is about what percentage on it?

A. About 25% higher.

Q. About 25% higher?

A. Than the non-automatic.

Q. Mr. Cohen, I am showing you a chart indicating the sales of the non-automatic and automatic types. Will you state whether the figures on that were made up under your supervision, and whether that correctly shows a comparison of the sales of the non-automatic as related to the Automatic for the years 1933 up through 1938.

A. I requested these figures, and this chart was presented to me giving me—or the figures were given to me rather, which are clearly shown here in these columns.

Q. I notice, for example, for the year 1933 and 1934 the same number given, 827,000 and 90 for each year. For those two years were the years kept separately, or just the two years together?

A. Well, you see '33 and '34, the fiscal year for the change-over, the new car is affected by both '33 and '34, and that could work out that way. And it does each year. '35 would last over into '36. The models are usually brought out in the fall of the year and they go over to the next fall. They usually take in two years, and their working out exactly is purely coincidental and I wouldn't know how to account for it other than the figures that I have are produced by competent——

Q. This chart, as a matter of fact, goes up through 1938, and shows that in that year there were 977,000 automatic sold and 181,860 of the non-automatic type. How is that condition continued through 1939?

A. As rapidly as we could make it possible, we took on additional business and replaced the non-automatic lighter with the automatic lighter. And since it was highly desirable in every instance, and there was no resistance [fol. 102] whatsoever, it was a matter of being ready; and it was acceptable on sight almost, after reasonable tests were made, which is usually the custom, the lighter was specified, the automatic lighter.

Q. Are most of your sales made to the car manufacturers for standard equipment, or are they made for so-called service sales, that is, sales directly or indirectly to

the users of the cars, in distinction from having the lighter put on the car as it is made at the factory?

A. The majority or the largest part of our manufacture is for standard equipment, and some of it is sold by the car manufacturer through his service sales, in addition to the equipment for cars of the previous years that were not equipped with automatic lighters.

Q. What percentage, very roughly, of your sales would you say were made to car manufacturers?

A. Oh, at the present day?

Q. At the present time.

A. Recent times, I would say 95 or 98%.

Q. And has that been true for several years?

A. That has been true ever since the automatic lighter has been in existence, and partially true of the non-automatic lighter.

Q. Tell us about just roughly whether there is any material number of non-automatic lighters sold by you today, non-automatic, the non-automatic type.

A. The only non-automatic lighters that we make today, to the best of my knowledge, and I am pretty certain, and that is the few that we sell to Henry Ford, or the Ford Motor Car Company rather, for the low-priced Ford; that is, there are DeLuxe Fords and then Mercuries, etc., and so on, who take the automatic lighter. But the lowest-priced Ford cars still take the manually operated lighter.

Q. And have you the equipment to make the non-automatic type now?

A. Yes.

[fol. 103] Q. And then this equipment for making the automatic type, is that—

A. Entirely apart from the other.

Q. Entirely different?

A. Yes, it is.

Q. Now, in this problem that you had, you were selling to car manufacturers largely, as I understand it. And what was the requirement in regard to the lighter that went to these car manufacturers in regard to shape and size?

A. The heating element holder, as we call it, that is the well, the part that fits into the instrument panel, had to be of the same size and diameter as that of the non-automatic type. Since room, facilities to receive the lighter, was limited, we were confined to that particular size.

Q. Will you state the reason again why you considered that you could not use this original Mead type of lighter such as the one that you hold in your hand, Plaintiff's Exhibit 12?

A. Well, my first observation was that it was much too large and I did not think it was possible to confine all that I thought was in this device into the well that was necessary for the car manufacturers.

Q. How about the operation of the Mead device?

A. Well, the operation, I had not given that much thought. I just took it for granted that it worked.

Q. How did it operate? Did it operate? Tell us how it operated.

A. Well, I didn't know, and still do——

Q. It is an automatic lighter?

A. It is an automatic lighter, and the method is to turn it clockwise, and when the heating element is up to proper incandescence it just snaps into a neutral position ready to remove from the base or holder.

Mr. Huxley: I want to offer in evidence this chart of sales, as Plaintiff's Exhibit 26.

(Plaintiff's Exhibit 26: Chart of sales.)

[fol. 104] By Mr. Huxley:

Q. Something has been said here about advertising. I wish you would tell us exactly what the Casco Company, as manufacturer, and in connection with the plaintiff, has done in regard to advertising these automatic lighters.

A. About a year later, within a couple of weeks of a year from the time we had first sold Packard and Chevrolet, we decided this would be a splendid opportunity to acquaint the general public with the automatic lighter, and we decided to go into a national advertising campaign, and we did. But after trying as we did to create a demand in the face of all these full-page ads, we were startled to find that we could not get anywhere, and we finally had to stop the whole campaign, after expending considerable money. And we had the advertising agency go out and find out why we were not doing what they thought we should do.

And what we finally arrived at was the lighter looked exactly as the lighter on their car, and they being familiar

with the lighter, the non-automatic type, that we had created an impression that we merely dolled up a non-automatic lighter and that there was not any additional advantage, and we just couldn't get that thought over to the public.

And we find now that there is a demand, a natural demand, that has been created from word-of-mouth advertising. One rides with another, and much to his surprise he finds that the automatic lighter is everything that he desires. And we have made physical tests in the field, to the extent that I am satisfied in my mind the advertising campaign was a failure because of the great similarity between the two lighters, and that it was all concealed behind the instrument panel, and that they looked alike, so much so that they just took it for granted.

[fol. 105] Q. When did you start this advertising of the automatic?

A. Why, I would say in April or May of 1937.

Q. 1937?

A. Yes.

Q. That was after you had made some sales to the Packard Company, and so forth?

A. After we had signed up Packard and Chevrolet.

Q. How long did you continue that advertising?

A. Oh, I would say to the best part of 1937—up to the end of 1937, and we short-rated all the ads, so to speak, and cancelled them off.

Q. Is it correct that since the beginning of, say, 1938, you have done practically no advertising on this automatic type?

A. Absolutely none. I might correct that and say there may be some trade-paper advertising along with all of our things that may appear, but I wouldn't know, because it isn't expensive advertising—twenty-five dollars against ten thousand dollars for "The Saturday Evening Post."

Q. You are thoroughly familiar with the sales policies that govern the sale of these by The Casco Company, are you not?

A. Somewhat. Not as much recently as heretofore. The sales are handled by Mr. Cochrane, but I am generally familiar with it.

Q. I think you said that about ninety or ninety-five per cent of these automatic lighters are sold to car manufacturers?

A. I do know that because that is the side of our business that I am familiar with.

Q. In your judgment has any advertising that you have done had any influence on the sales to car manufacturers?

A. I would say no, none whatsoever. The car manufacturer isn't interested in what advertising you do for such articles that he puts on his car as standard equipment. They won't let you refer to them. They won't let you use their name, stating that the car is equipped with it. They will, in some cases, but they generally won't. If you do, you have to get their permission.

[fol. 106] Mr. Huxley: I think there is no question about this and I think we can stipulate it: That in the year 1935, to wit, on the 1st day of May, 1935, The Casco Products Corporation granted a license under various patents to the Cuno Company, which license has since been cancelled. This is the only material thing: There is in paragraph one the following sentence:

"It is understood and agreed that in the license herein conveyed no rights are granted under the Mead patent 1,736,544, or any other patent whose structure is dominated by the claims of the Mead patent, nor the right to manufacture and sell complete replacement heating units having a special thread and diameter to fit such constructions."

Will you be good enough to stipulate that? It is a fact.

Mr. Allyn: I know that that particular point is a fact. With it there should go a similar admission that Cuno's license to Casco did not grant Casco any rights to any automatic lighters of the Cuno Company.

Mr. Huxley: Quite correct. We so stipulate. The only materiality is that in 1935 all about this Mead patent was known.

By Mr. Huxley:

Q. We have had demonstrated here one of the Casco automatic lighters, which seemed to be in a condition whereby the igniting element jumped completely out. Is that a common condition in these automatic lighters made by The Casco Company? Tell us whether or not it is common.

A. No, indeed. They are tested in a vertical position with a weighted member, so that if that were true we would know it.

[fol. 107] Q. Would that in your judgment be an extremely unusual occurrence?

A. It couldn't leave our plant in that condition. What has happened here, if you wish to know, is this. It is simple enough to take these little lances, as we call them, and deliberately push them in, and naturally you have lost the value of them. The purpose of these lances is to create a friction, and we have operated those lighters twenty-six thousand times, which is, truthfully, about four years' service, about fifteen operations daily. That is how we compute the life of the lighter, and during that period they don't fall out. When we test these at the factory we have a weighted metal knob and they are tested in this position, and yet they won't come out.

As a matter of fact, if they did the car manufacturer would soon let us know if something had to be done. That could not exist.

Mr. Huxley: That is all.

Cross-examination.

By Mr. Allyn:

Q. They could not be sold if they were loose like that, could they?

A. No, I would say not.

Q. I think you said that you had invested something like \$500,000 in special tools.

A. Tools, jigs, and fixtures. By that I mean machine tools as well, if you are familiar with what I am getting at. I mean dies, tools, jigs, fixtures, and machine tools, which would take in presses and all tools peculiar to the production of the lighters, such as screws.

Q. What kind of tools different from those used on the non-automatic are required for the automatic? Anything beside those required for making the thermostatic latch?

A. Yes, decidedly so. I will be glad to tell you. Where the dimensions differ, even to a very small degree, you will [fol. 108] appreciate that a new set of tools are required. That is a fact, and that is information you can obtain from any mechanic.

Q. That doesn't make the machine any different from the type that you had for the old non-automatic?

A. Yes, Mr. Allyn, that does. I can describe one of a number of instances, if you like, where a special machine

was bought—a number of them—all of which is easily accessible. Shall I describe any of them?

Q. I should like to know why there is anything peculiar about the manufacture of this device other than, possibly, in the way you make that thermostatic latch.

A. I will be glad to relate the whole manufacture to you.

Q. No. Just name some one important distinction.

A. Let us start with the most important part of the lighter—the thermostat. We find that in order that the thermostat be made accurate—it must be accurate—you have two choices, one of making a dozen individual sets of tools, all of which would be one and the same, or by what is commonly known as a multiple plunger machine; an eyelet machine also has the same methods. Making up an eyelet machine lowers, of course, the cost and makes for greater accuracy.

Now, then, were you to make it the old-fashioned way, with individual tools, there are about a dozen operations required and it would mean a dozen processes and a dozen individual sets of tools. In the eyelet machine this thermostat is made in a six-plunger machine, so that we have six plungers coming from the top down and we have six motions coming from below it—with an under-motion and over-motion—which makes it possible to produce that particular article in one machine.

Q. Excuse me just a minute. I realize that there is a difference in the way you make that thermostat, but I wanted to know what other machine was necessary if it [fol. 109] was at all different.

A. I can't tell you two at the same time.

Q. I have sufficient on the thermostat.

A. All right, we will move on to the well.

You take up the well of the automatic lighter and that of the non-automatic, and to all outward appearances they are one and the same. We bought a ten-plunger eyelet machine that cost us \$19,000 and some odd dollars and the purpose of it was this: Simply to create the accuracy required in the well, because the timing is tied in with the friction, and if the wells vary, which they will do as made in the common way where a wide tolerance is not important, but in that case it is all right.

Now, in this ten-plunger machine three of the last operations are purely sizing operations. They go in and out of the tools to iron them out, making it possible to pro-

duce wells that are accurate to a thousandth of an inch.

I dare say that in a non-automatic lighter a spread of ten thousandths would not impair the working of the lighter, so that if we didn't have that machine tool we would have to perform those operations known as sizing operations.

Furthermore, if you didn't take that slow process or that multiple series of operations in producing the well, you would work the metal so severely that you would crystallize it, and while they may be all right today, you might walk to your plant and the spasm in the metal created by the stress and strain of working the metal too fast would cause it to crack like glass, and you might lose three months' production that you may have built up; so that you must work the metal slowly, as your organization is familiar. I say, your organization. I mean Mr. Cuno's organization is familiar with the fact that if you buy a machine which has sufficient plungers you don't work the metal too severely in any one move, resulting in a perfect well at [fol. 110] the end of the operation. I can go on if you like.

Mr. Allyn: If your Honor please, I have heard enough. I don't know whether your Honor wants any more of it. I am satisfied with his answer.

Q. You stated that you made your first standard car equipment sale to Packard?

A. That is right.

Q. I believe that was in the fall of 1937?

A. No, I am very definite that it was in the mid-summer—early summer of 1936.

Q. I think you said that you had it on the market for about a year?

A. Yes.

Q. Before you sold to Packard?

A. No. I am sorry. I am sure you won't find in the record that I made that statement.

The Court: He said it was just about within a year after he sold the Packard that he started advertising.

By Mr. Allyn:

Q. Do you recognize that sheet (handling a paper to the witness)?

A. I have seen so many of these, truthfully. This looks like something we may have used at our sales meeting in

anticipation of the advertising campaign. We convene each year in Chicago, as you also know.

Mr. Huxley: We are willing to stipulate as to any printed publications.

The Witness: This is a forerunner that we give to our salesmen, acquainting them with an advertising campaign that we are about to launch. I haven't scrutinized it, but I will be glad to tell you if it is or not.

[fol. 111] By Mr. Allyn:

Q. Isn't it, in fact, a copy of a page dated February, 1937, of some national advertising?

A. Let me say this to you, Mr. Allyn: These may be proofs, but very often our printers will print enough of these to pass round. We have forty odd men in our organization, and we convene each year and much is talked about the things we are going to do the following year, and this could be—Mr. Cochrane, who is here, could tell you the whole story. He is the sales manager of our company. He could give you the exact purpose of that sheet and when it was introduced.

By Mr. Huxley:

Q. Mr. Cochrane is the sales manager, is he?

A. Yes.

Mr. Huxley: There is no doubt that there were these advertisements. If there is any question you would like to ask about them, all right.

The Witness: You see, we have to place advertising six to eight months in advance of the ads appearing, and that is why you might deal with earlier dates, but we have contracts in our office that we would be glad to present.

Mr. Byrne: Casco advertised in "The American Weekly," about which you inquired, in about July or August, 1937, Mr. Cochrane apprises me. This is a full-page advertisement that we had in what we termed a trade-paper magazine, announcing our national consumer advertising.

The Witness: We show the magazines we are going to use in the advertising campaign, such as "Collier's," "Life," "Saturday Evening Post," and so forth. It is a prelude to an advertising campaign.

[fol. 112] By Mr. Allyn:

Q. That is the campaign to which you referred in your direct examination?

A. That is right.

Q. And the same thing would be true of this full-page advertisement in "The Saturday Evening Post"?

A. No. This looks like a page such as I have seen in The Saturday Evening Post. That is a page as it appears in the "Post." The other paper you referred to, the earlier one, showed the magazines that we are going to use in the campaign. This shows the article in use.

I can give you some dates that Mr. Cochrane gave me, if you like. There is exactly the dates that the campaign went on. He just gave it to me this afternoon. He telephoned the office in anticipation of what you stated earlier in the case. There are the figures and the dates.

Mr. Allyn: I should like to offer in evidence the two sheets referred to by the witness. I believe it is stipulated that these were samples of advertising issued by the Casco Products Corporation in the spring of 1937.

Mr. Byrne: So far as the advertisements coming from "The Saturday Evening Post" is concerned. The other sheet was contained in an automotive trade-paper.

Mr. Allyn: Of February, 1937?

Mr. Byrne: That is right.

The Witness: That publication only goes to the dealers.

The Court: I understand that the plaintiff concedes that "The Saturday Evening Post" page was published in April, 1937.

Mr. Byrne: We don't know about the date, but along in that period. In 1937.

Mr. Huxley: Isn't that the date on it?

[fol. 113] Mr. Allyn: No, the page does not have it.

Mr. Huxley: But that was out of that issue?

Mr. Allyn: That is correct.

Mr. Huxley: All right, we stipulate.

Mr. Byrne: I am advised that the advertisement referred to appeared in "The Saturday Evening Post" some time after May, 1937.

Mr. Allyn: In the spring of 1937.

Mr. Huxley: I will change the stipulation to the spring instead of April 10, because there seems to be some dispute about the date.

Mr. Allyn: I will offer these in evidence as exhibits.

(Defendant's Exhibit E: "Saturday Evening Post" advertisement.)

Mr. Allyn: Exhibit F is the sample of the trade-paper advertisement.

(Defendant's Exhibit F: Sample of the trade-paper advertisement.)

Mr. Huxley: While we are on the subject, I think we can straighten it all out.

By Mr. Huxley:

Q. Are you familiar with this memorandum (handing a paper to the witness)?

A. Mr. Cochrane presented me with it.

Q. Is that correct?

A. I would have to accept it as being correct. Mr. Cochrane got it from our office.

Mr. Huxley: Are you willing to accept it this way?

Mr. Allyn: What is it?

Mr. Huxley: It is the actual dates when these things happened.

Mr. Allyn: I have no objection to putting it in that way.

[fol. 114] By Mr. Huxley:

Q. Tell us about that, will you, Mr. Cohen?

A. Shall I relate the contents of this?

Q. Yes.

A. First deliveries to Packard were in May of 1936, and our first deliveries to Chevrolet were in July of 1936. Trade-paper advertising appeared in February of 1937 and consumer advertising in April of 1937.

Mr. Huxley: As I understand it, that is agreed to without the necessity of further proof, is it not, Mr. Allyn?

Mr. Allyn: Yes.

By Mr. Allyn:

Q. Isn't it also true that you advertised in "Life" in 1938?

A. I wouldn't be sure. We cancelled off our advertising as soon as it could be cancelled. In other words, if we could

take our short-rate and cancel it, that is what we did, and if the contract had been let for a period of time where it could not be cancelled off, there was nothing else to do. In other words, the advertising——

Q. In other words the advertising did not draw?

A. It just didn't do a thing.

Q. You issue a catalog, don't you?

A. Yes. I would call it catalog pages in the form of a leaflet. We don't issue them. We give them to our customers who handle our wares.

Q. Well, you have the catalog printed?

A. We have catalog pages, and if they buy that article we insert this thing or send it to them and they insert it in their own binder. We don't issue a catalog. This is for salesmen's purposes, but if a customer buys these articles we send these pages and he inserts them in his binder and makes up his catalog. We don't issue a catalog. [fol. 115] Q. What I have just shown you is a series of loose-leaf sheets issued by your company?

A. Yes. Substantially a catalog in one sense of the word, I suppose.

Q. Examine it carefully and see if you know when it was published.

A. Which article?

Q. I had particular reference to the pages showing the cigar lighters.

A. These are cigar lighters that we made for twenty odd years down here (indicating). Do you want to refer to the automatic lighter or——

Q. All the lighters in there.

A. These are manually-operated lighters, and I don't see anything here that would indicate the date.

The Court: Couldn't we save time by your putting that question to some one else in the room?

Mr. Byrne: Yes. Mr. Cochrane is here.

The Witness: If the date is on there, isn't that sufficient evidence of when it was printed?

Mr. Huxley: Whatever the fact is, we are willing to admit it.

The Witness: That is out of my department.

The Court: Let us finish the examination of this witness, and if anybody wants to call somebody else he can.

Mr. Huxley: I should like to call one more witness.

The Court: Are you finished with this witness?

Mr. Allyn: I am through on that point.

The Court: Why not finish with this witness?

Mr. Byrne: We may be able to concede this.

Mr. Allyn: The answer is that Mr. Cohen does not know. If that is his answer, all right.

The Witness: Yes, I don't know.

Mr. Allyn: That is all.

[fol. 116] Redirect examination.

By Mr. Huxley:

Q. Mr. Cohen, you testified in regard to the way in which during 1936, as shown by this chart, the automatic lighters replaced the non-automatic ones. Will you state very briefly the advantages in operation of the automatic over the non-automatic that resulted from that?

A. I will be glad to. In the manually-operated lighter you have to hold the lighter in until it is ready to use. Very often you get a cold light, because you haven't held it long enough, or the contact has become oxidized, and you don't get a fast light, and you withdraw the plug or the heating element and pull it too soon and the tobacco sears on to what we call a cold light and holds the tobacco and sparks fall over your lap, and very often it destroys flimsy wearing apparel, particularly with the women, burning holes in their stockings, and so forth.

With the automatic lighter the light is very definite. The light is controlled by the temperature created through the heating element—the resistance element—and when it reaches the proper temperature it causes the bimetal to flex and the lighter is clicked out into a neutral position, ready to use, so that you have an audible warning and a perfect light each and every time.

With the non-automatic lighter very often the heating element is held in contact too long, and upon removing the heating element it has reached such a high degree of temperature that it will often fall out of the container—the heating element container or shell—and in one instance that we have on record the Chrysler Motor Car Company was sued because the red hot element fell between the shoe and heel and caused a dreadful burn, and a lawsuit followed. We have other instances of cars actually being wrecked because of the distraction through the use of a

manually-operated lighter, and there also was a lawsuit [fol. 117] brought by a Californian, one of our customers, the Western Auto Supply Company. We suffered quite an expense in settling the suit. It was already scheduled for trial when we came to the rescue of our customer and paid the damage.

The Court: Let us get on with material matters.

By Mr. Huxley:

Q. Are there any other advantages that you think of?

A. The advantage of the automatic is that you can press the lighter in anticipation of wanting a light and drive with both hands on the wheel until such time as the lighter clicks, which indicates that it is ready for use, and to reach down, pick it up, and get your light, without being distracted from the road, or in any way interfering with your driving.

Q. Does that cover it, you think?

A. I would say so, yes.

Mr. Huxley: That is all.

Recross-examination.

By Mr. Allyn:

Q. You identify the chart, Plaintiff's Exhibit 26, as showing the sales of automatic and non-automatic lighters sold by the Casco Company?

A. Pardon me. I didn't hear you.

Q. You identified this chart, Plaintiff's Exhibit 26, as showing the sales of the automatic and non-automatic Casco lighters?

A. Yes.

Q. Is that right?

A. Yes.

Q. Does that include the type of lighter that I show you now?

A. No, this is a manually-operated lighter, to the best of my knowledge. May I see it again? (The witness examined an object.) No. I would have to get my glasses. (The witness put on a pair of glasses.) I would say that this is a manually-operated lighter.

[fol. 118] Q. Yes. I say to you that you sold lighters just like that. Didn't you?

A. Yes, to the Ford Motor Car Company. It happens to be one of their lighters.

Q. The so-called Ford type?

A. This here is designed by the car manufacturer (indicating).

Q. That is a plug exactly like those made by you?

A. I would say so.

Q. And still made by you?

A. Yes.

Q. And still supplied for replacements on Ford cars?

A. Well, may I state this? That Henry Ford is now making sixty-five per cent of this himself? Cuno and ourselves share the rest of the business, whatever that is, and it is down to a point where if we made, oh, 75,000 this year I think we will make a lot, whereas we used to make five or six hundred thousand of these and share a million lighters between us.

Q. Is that included in the chart?

A. No, not in the automatic chart. Let me see that chart. Here is the non-automatic lighter and this would be included in the non-automatic columns and not included in the automatic columns. --

By Mr. Huxley:

Q. In other words, they are in the blue column but not in the red?

A. There is the story and it is more clear than I can answer.

Mr. Allyn: Merely identification to know whether they included this type of lighter in the report.

Mr. Byrne: Yes. Is that all?

Mr. Allyn: That is all.

I should have offered that in evidence. This is Defendant's Exhibit G.

(Defendant's Exhibit G: Cigar lighter plug.)

[fol. 119] Mr. Huxley: Mr. Cuno, will you be sworn?

CHARLES H. CUNO, called as a witness on behalf of the plaintiff, being first duly sworn by Clerk Carroll, testified as follows:

Mr. Huxley: I am calling Mr. Cuno as an adverse witness.

Direct examination.

By Mr. Huxley:

Q. Will you state your name, please?

A. Charles H. Cuno, c-u-n-o.

Q. Are you the President of the defendant company here?

A. I am.

Q. How long have you been such President?

A. Since the death of my father in 1923.

Q. 1923. Where do you live?

A. Meriden, Connecticut.

Q. Mr. Cuno, is it substantially correct that in the year 1935, the sales by the Cuno Company from 1934 to 1935 increased from about 60,000 to about 855,000? Is that substantially correct?

A. I couldn't answer that question. I don't know.

Q. You don't know. You have no information about it?

A. No, not with me.

Q. Is anyone here who does know?

A. I don't know whether we have a record of that here or not.

Q. You can obtain it by tomorrow morning, can you not?

A. Possibly. I will try, if you wish it.

Q. This evidence was introduced. The figures were given in some other litigation, were they not?

A. I will try to produce it.

Q. Will you get the same figures and have them here tomorrow morning, please?

A. Yes.

[fol. 120] Mr. Huxley: That is all.

Unless counsel care to stipulate it.

I want to find out the figures of the sales by the Casco Company.

The Witness: Cuno.

Mr. Huxley: By the Cuno Company, for these different years, from 1934 to 1938.

The Witness: You didn't state which type of lighter.

Mr. Huxley: Non-automatic.

The Witness: All non-automatic lighters.

Mr. Huxley: All non-automatic.

The Witness: All non-automatic lighters.

Mr. Huxley: Yes, all non-automatic cigar lighters.

The Witness: There are many types.

Mr. Huxley: Yes, any type of non-automatic.

The Court: Open face, or inverted face, or everything?

Mr. Huxley: Everything.

The Witness: Oh, I don't know. I am just asking that as a matter of information.

Mr. Allyn: This is the chart before the Court now.

The Witness: I didn't know you had that.

Mr. Huxley: All types.

Mr. Allyn: No, it applies only to these two types.

Mr. Huxley: I think in a few moments counsel and ourselves can get this matter straightened out and stipulated in the morning.

The Court: All right.

The Witness: Is that all, sir?

By Mr. Huxley:

Q. No, I would like to ask you one more question. The cigar lighter of the automatic type that you are now marking [fol. 121] is this one represented by Plaintiff's Exhibit 2, is it not?

A. Substantially, yes.

Q. And that was marketed in 1939?

A. I believe so.

Q. Prior to that, did you offer to the trade any other type of automatic cigar lighter?

A. Not to my knowledge.

Q. Did you ever see this Ashton patent No. 2,084,966 that I am handing you now?

A. Yes.

Q. In that there is a construction in which there is a thermostatic element which is wrapped around by a coil. Did you ever offer any such type of cigar lighter as that to the trade?

A. I don't know as we did.

Q. You don't know?

A. No.

Q. Your answer is you don't know.

A. That is right.

Q. All right. That is all. You own this patent, do you not, the Cuno Company?

A. That I cannot tell you, either.

Q. That you do not know. All right. Have you any reason to doubt the correctness of what it states on the face, "Assignor to the Cuno"?

A. Then we own it.

Mr. Huxley: All right, we have got that far. That is marked for identification. It is Plaintiff's Exhibit 27. That is all.

The Court: 27 for identification.

(Plaintiff's Exhibit 27 for Identification: Copy of Ashton patent No. 2,084,966.)

Mr. Huxley: The figures we will get together tomorrow morning. Aside from that, the plaintiff rests.

Mr. Allyn: I offer, if your Honor please, these four sheets, which I understand are stipulated by counsel for the plaintiff as being loose-leaf catalog sheets, being circulated to jobbers on request in the United States, showing different [fol. 122] types of cigar lighters offered by the plaintiff to the trade during the current year.

Mr. Byrne: Each catalog page carries its own date of print.

Mr. Allyn: Let them be offered as one single exhibit.

(Defendant's Exhibit H: Four sheets, loose-leaf catalog sheets.)

Mr. Byrne: Plaintiff desires to make clear that these pages comprised in the last exhibit are not issued as a catalog. They are sheets that are supplied to jobbers on request.

Mr. Allyn: I am not sure whether my brother offered the stipulation which we had in regard to the use of so-called soft copies of patents.

Mr. Byrne: I did. I stated at the time the feature we were concerned with then, other features pertaining to the defendant that applied, and asked that the stipulation be copied in the record, which was done.

Mr. Allyn: If your Honor please, I would like to offer in evidence the file wrapper of the patents in suit, for the purpose of showing the estoppel running against the plaintiff with respect to the interpretation of the claims which

they have endeavored to place upon us. The file wrapper of the Mead patent 1,736,544.

The Court: You had better mark them separately.

(Defendant's Exhibit I: File wrapper of Mead patent 1,736,544.)

(Defendant's Exhibit J: File wrapper of Cohen patent 2,140,311, known as the No. 1 Cohen.)

(Defendant's Exhibit K: File wrapper of the No. 2 Cohen patent, No. 2,117,232.)

[fol. 123] Clerk Carroll: That is three of them, three file wrappers.

Mr. Allyn: That is right. I offer a book of patents illustrating the state of the art, including for your Honor's convenience copies of the patents in suit, also. And I have the two sets of patents. As your Honor once suggested, you want one to mark up, and the other for purpose of record. Either one of these may be marked. It makes no difference which one is offered.

Mr. Huxley: I will have to object to this extent, if the Court please. Some of the patents are pleaded. I do not know what patents there are there. We have not got any recent information as to just what is in this book. I do not know whether they are supposed to be applied to the Mead patent or which Cohen patent. There is a mass of material there, some of which is obviously too late, and some of which is not pleaded. So I am afraid we will have to go down each patent and say whether it is offered to show the state of the art, and if so, as to what patent, and whether it is an anticipation and pleaded in the answer. Have you a list of the patents there?

Mr. Allyn: I am sorry I have not. I have given Brother Byrne here some extra copies of ones that were not pleaded, and which are not introduced, however, for the purpose of anticipation, but for the purpose of showing the state of the art.

The Court: The entire offer is restricted to merely prior art patents.

Mr. Huxley: Prior art patents, but now there are certain patents there. For instance, I presume the Copeland patent is there.

Mr. Allyn: The Copeland patent is offered for anticipation.

[fol. 124] Mr. Huxley: Not as a patent. If so, I object to it. But simply to show prior knowledge and invention as of the filing date of the application.

Mr. Allyn: That is correct.

Mr. Huxley: That is correct. Now are there any other patents there that may be prior to the Cohen patent, but are not prior to the Mead patent, for instance? In the pleadings, unfortunately the patents were not set up against any particular patents in suit, but just a mass of patents.

Mr. Allyn: The Morris patent anticipates claim 11 specifically of the Mead patent.

The Court: It is always my aim when the patents are brought on for discussion individually, to get specific information of just what they recite. If I overlook it, I will appreciate it if opposing counsel bring it up.

Mr. Huxley: Suppose we do it that way.

The Court: I think the simplest way is to let it be marked as a full exhibit with complete liberty to strike reserved.

Mr. Huxley: Precisely.

Mr. Allyn: All right.

Mr. Byrne: May we have the original one marked?

The Court: Could you mark one, Mr. Carroll, Exhibit L?

(Defendant's Exhibit L: Book of patents.)

Mr. Allyn: The exhibits offered for identification I would like to offer in evidence, the ones that have been offered for identification.

The Court: There is not anything more to identify them, is there? I guess we had better deal with those one at a time.

[fol. 125] CHARLES H. CUNO, called as a witness on behalf of the defendant, having been previously duly sworn, testified as follows:

Mr. Allyn: Mr. Cuno has already been sworn. He is now being called as a witness for the defendant.

Direct examination,

By Mr. Allyn:

Q. Mr. Cuno, you at one time met Mr. Mead, who was the patentee of the Mead patent in suit?

A. I did.

Q. And you had a conversation with him in respect to his device?

A. I did.

Q. Do you recall what he said as to the success or failure of his type of lighter?

Mr. Byrne: If your Honor please, I object to that as calling for hearsay.

The Court: Sustained.

Mr. Allyn: If your Honor please, Mr. Mead testified in the Chicago case, and we have stipulated that the testimony which he gave in the Chicago case could be used as evidence taken in this case. So we have in the record certain statements by Mr. Mead which he has made in this case. It seems to me pertinent that this witness should testify as to what Mr. Mead said to him.

Mr. Huxley: That is the most gross hearsay.

Mr. Allyn: How is it hearsay for Mr. Mead to come into court to testify?

The Court: You mean you are offering this witness to contradict the testimony of another witness?

Mr. Allyn: That is right.

[fol. 126] Mr. Huxley: The testimony as given in Chicago by Mr. Mead has been stipulated in this case with the same force and effect as if Mr. Mead came to testify. Now, as I understand counsel, he wants to take some hearsay statement that Mr. Mead might have made, to contradict Mr. Mead's testimony.

The Court: Under your stipulation the situation is just as though Mr. Mead had testified here.

Mr. Huxley: Had testified here by that testimony.

The Court: He was called by the plaintiff, I suppose.

Mr. Huxley: By the plaintiff, yes, sir.

The Court: If a witness, Mead, called by the plaintiff, testified to a certain fact, why isn't the defendant entitled to put on a witness to testify that Mead, the plaintiff's witness, has made a contrary statement off the stand?

Mr. Huxley: Because I think that whatever Mr. Mead wants to be cross examined about, he could be examined about by calling Mr. Mead if they wanted him, for any further examination. But some vague statement that this witness may have incorrectly remembered as to what Mr. Mead told him, it seems to me, is pure hearsay as bearing

on an issue, as proving a fact by something that Mr. Mead might have said.

The Court: I quite agree it is not admissible as direct evidence to prove the truth of what this witness says, but I will rule that it is admissible in contradiction of Mead, if indeed it has that effect, in view of the stipulation which makes Mead an earlier witness in this case.

Mr. Allyn: There were other witnesses, also, who testified in that case which are coupled up in this stipulation.

[fol. 127] The Court: I will receive the testimony for the limited purpose stated.

(The reporter read as follows:)

“Q. Do you recall what he said as to the success or failure of his type of lighter?”

A. Yes. He stated to me that after considerable experimenting they finally made a sample which was delivered to Mr. Fisher, who at that time was President of the Cadillac Motor Car Company. He had that on his desk for several weeks, hooked up to a battery, and was quite excited about it at first, but after it failed to operate consistently he finally dropped the idea of putting them on as standard equipment on Cadillac cars. Sometime after that a jobbing model was brought out, which was sometime in 1928, a number of which were sold to the Montgomery Ward Company. And he told me that he was very much disappointed and disgusted by the fact that practically all of them came back after having been used a few times. The setting of the thermostat was evidently too delicate for ordinary operation, due to difference of temperature of atmospheric conditions. In summer-time, why, the temperature got up to a hundred and in the winter-time 22 degrees below zero, and his device did not work satisfactorily under all those conditions. In fact, he told me that he was so badly disappointed in the operation of the lighter that he finally quit his job with the company.

By Mr. Allyn:

Q. Mr. Cuno, will you look at this Defendant's Exhibit G and state if you know what that is.

A. That is one of the types of cigar lighters, the plug part of it, which we sell to the Ford Motor Company.

[fol. 128] Q. And you had at one time as mentioned by the plaintiff a license agreement with the Casco Products Corporation, did you not?

A. We did.

Q. Do you know whether or not they made any devices under that license?

A. We understand they did, because they at one time were supposed to receive about half of the Ford business and we the other half. And naturally the Ford Company wanted all lighters made exactly alike, so that all parts would be interchangeable.

Q. I will show you another device and ask if you know what that is.

A. This is a manual type of lighter similar, or possibly one of the types sold to the Ford Motor Company, of the so-called Ashton design.

Q. And the socket is what?

A. The socket is so made that it can be fastened to the instrument board by simply pushing it into the instrument board, putting in a steel plug to expand the three lugs, and then it is held in without the use of any additional brackets or nuts.

Q. That particular socket was made by your company, was it not?

A. Yes. It has our name on the bottom.

The Court: May I suggest that the record make it plain whether that is the Ashton patent that the plaintiff put in evidence? He says it is a so-called Ashton design.

Mr. Allyn: That is true, if your Honor please. The Ashton patent.

Mr. Huxley: We had one marked for identification. I think it is a different patent.

Mr. Allyn: Ashton patent 2,060,783. It is a different one from the one my brother marked.

The Court: That is what I wanted to get straight.

Mr. Allyn: It is 2,060,783, which is in our book of exhibits.

[fol. 129] By Mr. Allyn:

Q. That was the Ashton patent to which you referred just now?

A. Yes.

Mr. Allyn: I offer that socket and plug as a defendant's exhibit.

Mr. Byrne: I object to that as immaterial to any issue that would be involved here.

The Court: What is the purpose of it?

Mr. Allyn: I want to show the Court what the defendant and plaintiff were talking about, of a non-automatic, that they were making all these years, and which they are now making. And it is a part of the current sales. It is one of the devices illustrated in the——

The Court: Chart?

Mr. Allyn: —catalogue sheets of the plaintiff, and it is sold by both parties.

The Court: What of it? How is that material on the suit dealing with an automatic structure?

Mr. Allyn: My friends put in evidence here the total of sales showing how the sales went up and sales went down, and they included automatic and they included non-automatic.

The Court: I do not see that the detail of the construction entering into the non-automatic is material.

Mr. Allyn: No, it is not. That is true.

Mr. Byrne: Then it ought to be out.

Mr. Allyn: It is merely explanatory of what they mean when they are talking about the non-automatic.

The Court: It does not seem to me that that is in issue.

[fol. 130] Mr. Allyn: No, it is not in issue. It is purely explanatory.

Mr. Byrne: Then I submit, if your Honor please, it is immaterial and should be excluded.

Mr. Allyn: That particular patent shows what was being done under the license agreement that my friend referred to. He brought that up. I do not know just what his implications are.

Mr. Byrne: The sole implication—and it is not an implication:——

The Court (Interrupting): I do not think it is admissible in that respect. I am wondering if I have already let in the Ashton patent.

Mr. Byrne: It is only marked for identification.

The Court: No, the patents were marked.

Mr. Byrne: Oh.

The Court: I wonder if it is improper to have a commercial structure that goes with them. I am inclined to think it is. I will sustain the objection.

Mr. Allyn: I do not think it is particularly important, if your Honor please. In connection with these file wrappers we wanted the Court to know what was cited.

The Court: I think I ought to read the file wrappers with the patents, and not with the commercial structure.

Mr. Allyn: Very well.

By Mr. Allyn:

Q. Mr. Cuno, when was it that Mr. Mead had this conversation with you in regard to his lighter?

A. I believe it was early in 1939.

Q. Do you know whether it was before or after the trial of the case of the plaintiff's against Sinko Tool & [fol. 131] Manufacturing Company?

A. It seems to me it was after the evidence. After he was called as a witness at that trial.

Mr. Allyn: That is all. Just a minute.

Cross-examination.

By Mr. Byrne:

Q. Mr. Cuno, where was this talk about you held, that you had with Mr. Mead?

A. In the office of the Bowen Products Company of Detroit, Michigan.

Q. And Mr. Mead is employed there, is he not?

A. Yes.

Q. And has been for a long period of time, has he not?

A. I don't know how long.

Q. You don't know how long. You know he is a man of a good deal of standing with that company, do you not?

A. I would assume so.

Q. Did you make a special trip there to see Mr. Mead?

A. I did, from Detroit.

Q. You did from Detroit. At that time you received from Mr. Mead one of these devices which was made by the Jessop Company or someone else, did you not?

A. No, I did not.

Q. You had one in the possession of your company before the trial of the Sinko case?

A. That was one that Mr. Mead handed to our Mr. Wolfson. Mr. Wolfson saw Mead long before I did.

Q. So Mr. Wolfson of your company, and you, personally, have had interviews with Mr. Mead about the matter?

A. That is right.

Q. Did any of your salesmen or any of your officials pick up on the market one of these devices which were put out about 1929 or thereabouts?

A. I don't know.

Q. Or earlier?

A. I don't know.

Q. Didn't have any brought to your attention at that time?

A. It is so long ago, I can't remember.

[fol. 132] Q. Yes, I see. But you have a historical exhibit or morgue, as same are wont to call it, for devices that are on the market, do you not?

A. Quite a large one.

Q. Did you ever look there for one of these old Mead devices?

A. No, I do not believe I did.

Q. When this device came to you through your associate, Mr. Wolfson, did you test that device at that time?

A. Not personally.

Q. You did not. Well, it was tested, wasn't it?

A. I believe so.

Q. Was a report made to you about that test?

A. I think a verbal report was made.

Q. Yes. And the report was that it worked, was it not?

A. It was not satisfactory at all.

Q. Answer my question, please. It would work to light the coil, would it not?

A. I cannot even answer that.

Q. You cannot even answer that. You cannot answer that. You saw it operate today, did you not?

A. No, I did not.

Q. You were not here in Court?

A. I was sitting over the other side.

Q. Do you question that Mr. Johnson got a light in the presence of the Court with that?

A. I would not question it.

Q. No. Sure not. You made mention of the fact that Mr. Mead has said that he took one of these devices to a Mr. Fisher of Cadillac, and that Mr. Fisher of Cadillac

said he could not use it for standard equipment. Is that what you said?

A. I did not say it that way. I said that Mr. Fisher was very much excited about it, and had it put on his desk, hooked up to the battery, and left it there several weeks. And played with it every day, lighting cigars, etc.

Mr. Byrne: Now, if your Honor please, I move to strike out from the direct testimony of the witness all reference [fol. 133] to the purported conversation with Mr. Fisher on the ground that that is unquestionably hearsay, what Mr. Mead said that somebody else had remarked with respect to this lighter.

The Court: I will make the same ruling I made before. It is admissible not to prove the truth of the hearsay statement, but it is admissible only insofar as it has a bearing on Mead's testimony in Chicago, which is now a part of this record and which I have not yet read.

By Mr. Byrne:

Q. Do you know whether or not the testimony which you are now giving does contradict any testimony which Mr. Mead gave at the Chicago trial?

Mr. Allyn: I object.

The Court: I do not think that is a question for the witness.

By Mr. Byrne:

Q. Mr. Mead was quite willing to talk with you about the matter when you came to him, was he not?

A. Yes, certainly. I do not think he had anything to conceal.

Q. Yes. How early did you know that this Mead lighter was carried in the catalogue of one of the Chicago mail-order houses?

A. That is a difficult question for me to answer. I do not know.

Q. Is it a matter that came to your attention comparatively recently?

A. Possibly within the last two or three years.

Q. But you were in the cigar-lighter business back in 1927, '28 and '29, along in there, were you not?

A. Yes.

[fol. 134] Q. You did not know about that having been listed in the catalogue of this mail-order house at that time?

A. We do not see all the catalogues. I can simply say this, that it evidently made no effect on the market or we would have known it.

Q. Of course, you now say your recollection is such that you cannot say that you knew about it back in that early time. Is that it?

A. I do not know. I do not recollect it.

Q. Yes. Well, did you ever see the listings of your own company in the catalogues of the Montgomery Ward & Company?

A. No, I do not watch those things.

Q. I see. Will you be good enough, please, to look at a photostatic copy, which please accept from me as true, which comes from the Montgomery Ward catalogue, and see if we do not list Mead's lighter alongside of the Cuno lighter at the point or place where I indicate.

A. Did you say there is a Mead lighter listed here?

Q. I understood so.

A. I do not see it. Well, that looks so different from the sample submitted in evidence that I would not recognize it.

Q. Well, nevertheless, it is listed right alongside in the next column to a device of your company, the Cuno Company, is it not?

A. It looks as though it might be.

Q. Yes. Can you identify your own device?

A. That looks like one that we made, and also one that Casco made. They were very similar.

Q. Now, in turn we find that comes from Montgomery Ward catalogue, issue of the spring and summer of 1929.

A. Yes.

Mr. Byrne: If my information is correct, I will ask that this photostatic copy of the front page and page 6 of the Montgomery Ward & Company catalogue for spring and summer of 1929 be marked for identification Exhibit 28.

[fol. 135] By Mr. Byrne:

Q. Now, do you know, or did Mr. Mead tell you, when he left his previous employment, where they made this lighter, this automatic lighter exemplified by Exhibit 12 here?

A. He didn't seem to remember exactly. I asked him that particularly.

Q. Yes. Well, did he say to you——

The Court: Present it to the Clerk for marking or we will have confusion. 28 for identification.

(Plaintiff's Exhibit 28 for Identification: Photostatic copy of front page and page 480 of Montgomery Ward & Company catalogue for spring and summer of 1929.)

By Mr. Byrne:

Q. Did he not tell you it had been a matter of a number of years?

A. No, he didn't say.

Q. Did not say?

A. Just did not remember when he left.

Q. Did he remember the name of the company that took over and actually made this Mead type lighter?

A. I do not believe I asked him that.

Q. Didn't ask him that. Did he tell you where it was made, at Detroit or Cleveland or where?

A. He didn't say that, either. He simply said that Mr. Jessop was interested in the company.

Q. But he didn't tell you how long it had been from the time he left the Jessop concern until you talked with him, did he?

A. No.

Q. By the way, who accompanied you in your talk with Mr. Mead?

A. Mr. Mead and I were alone most of the time. One of our salesmen took me down there, but he was in another room practically all of the time.

[fel. 136] Q. You wanted to be alone with Mr. Mead?

A. No. The other man just didn't think it was necessary for him to be there.

Mr. Byrne: I think that is all, Mr. Cuno.

Mr. Ailyn: Of course, if your Honor please, on that Montgomery Ward catalogue I do not know what the structure was that was being advertised. And I do not know, therefore, how pertinent it may be. I assume it is made to tie up the other evidence.

Mr. Byrne: That is right.

Mr. Allyn: (Continuing.) —that was produced by stipulation to show that Montgomery Ward had an advertisement.

Mr. Byrne: Of the automatic lighter, and it was continued another year beyond, which was covered in the previous testimony.

Mr. Allyn: It is referred to as an automatic lighter, and alongside of it is a Cuno National Automatic cigar lighter.

Mr. Byrne: Certainly. You do not know your neighbors.

Mr. Allyn: I do not have to.

The Court: Let us make progress. What is the situation?

Mr. Allyn: My friend offered this.

Mr. Huxley: We have not offered it. It is marked for identification.

Mr. Allyn: Well, that is all. Mr. Wolfson.

[fol. 137] S. L. WOLFSON, called as a witness on behalf of the defendant, being first duly sworn by Clerk Carroll, testified as follows:

By Clerk Carroll:

Q. What is your full name?

A. S. L. Wolfson.

Direct examination.

By Mr. Allyn:

Q. You are a resident of Meriden, Connecticut?

A. Meriden.

Q. And you are the Chief Engineer of The Cuno Engineering Corporation?

A. I am.

Q. For how long have you been employed by The Cuno Engineering Corporation?

A. Since the latter part of June of 1927.

Q. What kind of training had you previously had prior to going with The Cuno Corporation?

A. Practical mechanics, and I hold a diploma in electrical and mechanical engineering from The Lowell Institute School of the Massachusetts Institute of Technology, and a number of years' experience as experimental mechanic.

draftsman, designer, and engineer in general for various concerns.

Q. You are familiar with the cigar lighters made and sold by the defendant, I presume.

A. I am, quite.

Q. Now, do you know how many years they have been making cigar lighters?

A. I know from my own knowledge that they have made them ever since I have been there and had been making them for a number of years prior to my coming. I believe it was somewhere in 1917 or 1918 that they started making cigar lighters; perhaps earlier than that.

Q. I will ask you to identify this device (handing an [fol. 138] object to the witness).

A. That is a partially cut-away model of our current thermostatic lighter—partially cut-away model.

Q. So as to show the interior construction of the various pieces?

A. As to show the working of the various parts. It is a commercial lighter cut-away to show the workings of the various parts.

Q. You listened to the testimony of Mr. Johnson in regard to the Cuno automatic lighter this morning?

A. I did.

Q. You heard the description of the various operations?

A. I did.

Q. You are familiar with the use of this device, are you not?

A. I am.

Q. When Mr. Johnson testified he said that the igniter sometimes touched the abutments in the bottom of the socket and that sometimes it did not. What have you to say as to that?

A. Up until the time Mr. Johnson had spoken, I never questioned the fact that the igniter rested on the abutments. That is what it is put there for. In fact, in manufacture we endeavor to arrange the groove into which the detent finger presses so that there is a slight clearance when the igniter rests against the abutments at the bottom of the socket.

In other words, you can move that slightly before the detent finger hits the back edge of the groove. I believe that was Mr. Johnson's explanation of why it was possible that sometimes it did not touch it.

Q. Now, you may examine Plaintiff's Exhibit 2, which shows one of the Cuno lighters not cut-away.

A. Well, you will notice there just what I stated—that you could move that back slightly before the detent finger engages the shoulder. Therefore, no action of the detent finger would prevent the heating unit cup seating on the bottom of the contact—drawn contact.

[fol. 139] Q. This is identical in every substantial particular with the cut-away sample that I have, is it not?

A. Within the commercial manufacturing tolerances, yes.

Mr. Allyn: This cut-away sample I want to offer in evidence.

(Defendant's Exhibit M: Cut-away sample.)

Q. What is the purpose of that spring detent on the side of the socket of Plaintiff's Exhibit 2, the Cuno automatic lighter?

A. The purpose of the detent is to prevent an outward movement of the otherwise stationary part of the plug under the influence of the momentum of your knob when the unit releases. In other words, when this thing releases you have a mass that is moving out with a certain velocity under the influence of a spring, and you have another mass which is stationary, acting as a brake for that motion, and you also have the detent action of your finger. The object is to absolutely prevent any possibility of that plug jumping out of the socket.

Q. In other words, when the parts are in the closed-circuit position, the igniter cup is in contact with abutments at the bottom of the socket, and the sliding contact of the sleeve—the inside sleeve—is in engagement with the thermostatic fingers, is that correct?

A. That is right.

Q. When the thermostat bends the contact sleeve slides out, but the igniter and its holder remain stationary?

A. Correct.

Q. Because of this detent?

A. Correct.

Q. Now, what have you to say as to whether or not the thermostatic fingers of the Cuno lighter are or are not heated by direct conduction from the igniter unit?

A. If there is any conduction it must be very, very indirect, because there is no short path at all from the igniter unit to the thermostatic arms.

[fol. 140] Q. The thermostatic arm does not engage the igniter unit?

A. No, nor any part directly connected with it or indirectly.

Q. It engages only the sliding contact sleeve, is that right?

A. That is correct.

The Court: May I see that last exhibit?

(An object was handed to the Court.)

Mr. Allyn: For the purpose of the record, because my friend has referred to the reference numbers, this Plaintiff's Exhibit 21 is an enlarged drawing, showing the Cuno automatic cigar lighter.

Q. Now, in this exhibit there is shown the various parts. Do you know what the relative mass is of the stationary and movable parts of the plug and this lighter, disregarding the knob? I mean the mass of relative weight of the igniter head 28, the post 25, the metal cup 24, and the insulating body 18, on the one hand, which remain stationary at all times, and the sliding member 35 and its rear end and the attached spindle 21?

A. The mass of the stationary parts exceeds the mass of the moving parts many times, perhaps as much as five or six to one. I am not certain as to the figures, but I know that it is considerable.

Q. In other words, the part that moves is——

A. Light in weight.

Q. Is relatively light in weight?

A. Correct.

By Mr. Huxley:

Q. Was the knob disregarded?

A. The knob was disregarded. That may vary from one model to another.

By Mr. Allyn:

Q. The knob is a part of the device which is designed to suit the particular customer?

A. It is specified by them usually.

[fol. 141] Q. Now, in the device of the second Cohen patent all of the parts of the plug, as I understand it from Mr.

Johnson's testimony, move when the thermostatic latch releases the igniter head, with the exception of this little thin metal sleeve 38?

A. That was my understanding.

Q. In other words, the sleeve 38 is supposed to stand still and all the rest of the plug moves?

A. That is as I understand it, yes.

Q. Now, in the commercial sample of The Casco Company, as typified by their exhibit 19, if we disregard the knob on this plug of exhibit 19, what have you to say as to the relative weight of the stationary and moving parts when the device is released by the thermostat?

A. Since the only part that does not move is this light shell which encloses the spring, I think it is quite obvious that by far the greater part of the mass is moving when the lighter lets go. It might be either three times the mass or it might be four; considerably greater, anyway. The part that does not move is insignificant as compared with the rest.

Q. Will you state to the Court what that relative mass has to do with the operation of this lighter?

A. Well, my observation has been that the operating force—the spring is about the same in both lighters. That force acts through about the same distance. The mass moves through about the same distance. The break in both lighters is approximately the same, and you have a certain mass moving under a certain spring force in both cases. In one case you have a large mass and in the other case you have a small mass. The momentum of that large mass moving under the force of the spring will be greater than that of the small mass, and conversely, you have as an anchorage in one case a large stationary mass, which tends to oppose the moving mass, and in the other case you have a small mass which opposes the movement of the other mass. Now, even though the product of the force acting [fol. 142] and the mass moving was the same—the momentum was the same in both cases—in the Casco lighter you have very little braking action. You have a light part hanging on to the end of it, whereas in the Cuno lighter you have a rather heavy part to stop that action, disregarding entirely any detent fingers.

Have I made myself clear, your Honor?

The Court (to the witness): I understand your observation. I am not quite sure that I see its significance. That

is to say, I don't feel sure that I see any bearing on the issues in this case.

By Mr. Allyn:

Q. In the Cohen patent No. 2—you have read it, have you not?

A. I have.

Q. Did you find in it any suggestion as to the necessity of stopping this mass when impelled by the spring?

A. I don't recollect that there was any indication of any means for stopping it.

Q. How important is it to stop that mass when the spring has been released?

A. Well, if there is no force acting to stop the mass, it will continue in the line of motion.

Q. In other words, the plug will jump out of the socket?

A. There will be nothing to stop it.

Q. In the defendant's design there is a definite latch to stop the movement of the plug and hold it definitely in a fixed position at all times?

A. Not only is there a detent, but there is the stationary mass which acts as an anchor—the part that is not moving.

Q. The only part that does move in the opening of the circuit in the Cuno automatic is the sliding sleeve on the inside of the body, is that right?

A. With whatever is attached to it.

[fol. 143] Q. Knob or push-button or whatever it is?

A. With whatever is attached to it in the way of a knob.

Q. Now, the problem of thermostatic metal required in these lighters has been discussed to a certain extent by Mr. Johnson. Do you know to what extent the character or type of the thermostatic metal is important in connection with the design and manufacture of these devices?

A. It is quite important that it be suited to the service for which it is intended. It has to be suited for the temperature, in the first place, to which it will be exposed and for the range through which it will have to operate.

Q. What kind of bimetallic thermostatic metals are there?

A. The manufacturers generally class it as low heat, medium heat and high heat. That heat indicates the range of the temperature to which it is apt to be exposed and under which it will have to operate.

Q. Now, if in the so-called Mead type lighter a high temperature metal was employed in the thermostatic member—it is number 54 in the patent——

The Court: I have it in mind.

By Mr. Allyn:

Q. (Continuing.) What would be the effect under normal operating conditions?

A. Just where is that located?

Mr. Byrne: I have been listening to this attentively, but I can't find that it has any bearing or is in any wise material. I object to it unless my friend can show some materiality. It seems to me that we ought not to go far afield on this matter.

Mr. Allyn: It is my contention that there is insufficient disclosure to enable one to build an operative lighter in any of these patents. All three of them are wholly defective [fol. 144] in that respect. There is nothing to indicate that any of the alleged inventors had the remotest concept of this difficulty of the difference between high and low temperature of bimetal. If one is used it might work. If the other is used it won't work, and that it has been found can only be tested out by experiment.

The rule is that where experiments are required in order to produce an operative device, the patent is defective—fatally defective—for failure to disclose and to do away with the necessity of experimentation. Here it has been perfectly plain from Mr. Johnson's testimony and Mr. Cohen's testimony that they experimented for years before they got a satisfactory device. I think that that is pertinent.

The Court: Unless Mr. Byrne has a good answer, I am inclined to think that the question is admissible for what it is worth. I suggest that we defer the answer until tomorrow morning.

We will suspend until 9:30 tomorrow morning.

(At 6 o'clock a recess was taken until Friday, November 3, 1939, at 9:30 o'clock A. M.)

November 3, 1939, 9:30 A. M.

(The trial was resumed.)

Mr. Huxley: If the Court please, yesterday I was examining Mr. Cuno about some figures of sales, and I am very glad to say that counsel for defendant has very kindly supplied us with the figures. These figures which represent [fol.145] the 2600 and 1700 series combined of the defendant company, as I understand it, represent the bulk of the sales from the years 1934 to 1938 inclusive, of the non-automatic wireless lighters sold by the defendant, the bulk of the sales.

Mr. Allyn: That is correct.

Mr. Huxley: In excess of 90%, anyway. The figures are as follows: for the year 1934, 330,000. For the year 1935, 880,000. For the year 1936, 920,000. For the year 1937, 775,000. For the year 1938, 220,000.

The Court: Is your memorandum in such form that you could put it in?

Mr. Huxley: This, as I understand it, is a chart which is taken from another case. We would be very glad to have a duplicate made and introduce it in the form of a chart if it would be more convenient for your Honor. The figures that I have read are the figures represented on this paper.

The Court: I merely suggested it because sometimes it is more convenient for me working on a case to have an exhibit than to have to paw through a large transcript.

Mr. Huxley: Very well.

Mr. Allyn: No objection.

Mr. Huxley: We will reproduce this chart then which was Exhibit Q. Was it?

Clerk Pickett: In another case.

Mr. Huxley: In another case. And we will offer that in evidence, that same chart, as Plaintiff's Exhibit 29.

The Court: Why not put it in now and give it a number, and you can substitute for it?

Mr. Huxley: Yes. We will offer that as Plaintiff's Exhibit 29.

[fol.146] (Plaintiff's Exhibit 29: Copy of chart, Plaintiff's Exhibit Q in another case—copy to be furnished.)

Mr. Huxley: A photostat can be furnished.

The Court: Is it necessary to let that copy go?

Mr. Allyn: I took it out of another case.

The Court: Is that case still alive?

Mr. Allyn: Yes.

The Court: Then, we will have to substitute a copy.

Mr. Huxley: Mr. Allyn offers to make a chart showing the same figures, for your Honor's convenience. We will put it in in chart form.

Mr. Allyn: Mr. Pickett says that he can have that photostated during the day.

The order having been interrupted momentarily by this, I want to say that yesterday Mr. Huxley asked us to stipulate in regard to a former license from Casco to Cuno. To avoid any misconception of the situation, I should like to ask that counsel stipulate that Cuno was licensed by Casco under the Morris patent 1,376,154 and others. Is that not correct?

Mr. Huxley: That is correct.

Mr. Allyn: And you stipulate that?

Mr. Huxley: I so stipulate.

Mr. Allyn: And that Casco was licensed by Cuno under Wolfson 1,980,157 and others?

Mr. Huxley: That is correct.

Mr. Allyn: And that the agreement was cancelled by Cuno in 1938, after the expiration of the Morris patent.

Mr. Huxley: Whatever the date is. November, 1938, I am sure it is. That is correct.

Mr. Allyn: Now, may Mr. Wolfson finish?

The Court: Very well.

[fol. 147] S. L. WOLFSON, a witness called on behalf of the defendant, resumed the stand and testified further as follows:

Direct examination (continued).

By Mr. Allyn:

Q. Just a moment, Mr. Wolfson.

Mr. Allyn: A question was asked of Mr. Wolfson before the closing yesterday, and I should like to have that question repeated. Your Honor ruled that it might be answered.

(The reporter read as follows):

“Q. Now, if in the so-called Mead type lighter a high-temperature metal was employed in the thermostatic member—it is number 54 in the patent—what would be the effect under normal operating conditions?”

Mr. Byrne: That was objected to, if the Court please. The question is, of course, hypothetical. A patent in the first instance is addressed to the engineers and men skilled in the art. It was for that reason that we objected yesterday, and it seems to me that our good friends on the other side ought to confine themselves within reasonable limits on this copy.

The Court: I think it is admissible. I overrule the objection.

The Witness: Well, I believe my answer was, Which one? You asked the question regarding a specific part of the Mead lighter, and it was not clear in my mind at that time which particular part it was.

By the Court:

Q. I think the transcript indicated number 54 in the patent.

A. I didn't have the patent before me.

[fol. 148] By Mr. Allyn:

Q. (Mr. Allyn handed a paper to the witness.)

A. If a so-called high heating metal were used in a position as remote from the source of heat as shown in the patent for part 54, the results would be unsatisfactory.

Q. What is your opinion with respect to the practicability of a device of the type of figures 19, 20 and 21 of Mead where the entire thermostatic device is outside of the socket?

A. I shouldn't consider a device so constructed would be satisfactory in operation, at all satisfactory in operation. I shouldn't think it would work.

By the Court:

Q. Those figures show the thermostatic device outside both the plug and the socket?

A. Yes, sir. They show only one thermostat. That is the thermostatic piece 54¹, controlling the latch.

Q. In what figure?

A. Figure 21, showing the thermostatic latch 54¹, controlling the spring detent 53.

Q. Doesn't that figure show that inside the socket?

A. I don't see any other indication of a thermostatic member of any kind.

Q. Isn't the thermostat there inside the socket?

A. Figure 21, I believe, is a section, a partial section of the same device as shown in Figure 20, and in Figure 20 there is absolutely nothing shown inside the socket of the nature of a thermostatic spring or member. In Figure 21, as I see it, the only thing tending to return the socket to its inoperative position is the ordinary coil tension spring 105, entirely outside of the socket.

By Mr. Allyn:

Q. To clarify that, which member do you call the socket in that particular?

A. The part that receives the igniting unit, and it is numbered 41, I believe, in Figure 20. I cannot see where [fol. 149] that line ends. That line appears to end there at the socket.

Q. In other words, you call the member in which the plug fits the socket?

A. The member in which the plug fits.

Q. And where is the activating thermostatic element in the device as shown in Figure 15?

A. It is part No. 47 in the base of the socket, directly opposite the heating element, facing the heating element.

Q. What have you to say as to the desirability of having the operating spring directly heated by the igniter?

A. Will you repeat that?

(The last question was read.)

A. Well, it is in a position to receive the greatest amount of heat from the igniter in that way. It is also in that position, in that particular device, if that is what you are referring to, in a position to receive ashes, products of combustion, and would be otherwise adversely affected by the use of the lighter.

By the Court:

Q. I do not understand in Figure 20 where the thermostatic spring 54¹ would appear if it were shown in Fig. 20 which it is not.

A. It is back of the section, and therefore does not appear cross-hatched.

Q. Let me put my question this way. You say Figure 21 is a cross-section on Figure 20.

A. I should say that it was a cross-section on Figure 20.

Q. Taken on what lines on 20?

A. There is no line shown in Figure 20 for that section, but I could draw one in accordance with the appearance of Figure 21 to show where it would have to be taken in order to show as it does, if I may.

[fol. 150] By Mr. Allyn:

Q. Referring now to Exhibit 11.

A. I should say that Figure 21 was a section taken through Figure 20 on a line such as I have indicated by my pencil, and looking toward the dash. Therefore, 54¹ in Figure 21, which is colored in this exhibit, an orange color, would be shown in Figure 20 there, correspondingly colored.

Q. Is the spring 105 in Figure 21 thermostatic or non-thermostatic?

A. As it is represented, it would be a simple coil spring, non-thermostatic. There is no indication that it is anything else on the drawing.

Q. A simple tempered spring?

A. A tempered coil spring.

By the Court:

Q. Where would you conclude that the spring 105 would be shown, if it were attempted to show it in Figure 20?

A. It would appear in here somewhere as a figure, and a cylindrical section line that interrupts some coils of the spring. You see it in perspective there to some extent, because if you are looking at the thing this way the back end of the spring is lower than the front end. Figure 20 is not complete in that respect.

The Court: Very well.

The Witness: There is one thing, though, if I may add, that in Figures 22 and 23 the attachment of that spring to the socket is shown, where it hooks in.

By Mr. Allyn:

Q. What, if any, objections of a serious character do you find to the structure disclosed in that Mead patent?

[fol. 151] A. Its general form is defective as being too bulky. There is no provision whatsoever for preventing the contact pin 75 from short-circuiting on the case if you attempt to withdraw it without first bringing it back to the proper rotated position. It is like a key in a key-hole.

By the Court:

Q. What would it do if it did short-circuit during the instant of withdrawal?

A. If you attempted to withdraw it without bringing it to its proper rotated position, you would short it against the case.

Q. My question was, What harm would that do?

A. You could not withdraw it without breaking through the wall of the case. The case has a key-hole in it. Unless you are in line with that key-hole and slot, you can't withdraw it. If you attempt to withdraw it you simply push it up against the case before you release it from contact with that latch and you get a direct short with the ground inside of the lighter. These lighters all have a metal case.

By Mr. Allyn:

Q. What would be the effect of the ground?

A. It would tend to short-circuit the battery.

Q. Well, what I want to know is, What difference would it make if you did?

A. Well, you would burn the thing out.

Q. You have already mentioned the subject of the actuating spring in the bottom of the socket. What about the pivoting of the socket in the base, so that it rotates?

A. That is held in by a simple rivet, and has a flat bearing against the metal base plate. There is no apparatus there for adjustment. You have a dry bearing, and that [fol. 152] would get out of adjustment. It might stick and corrode, or it might become loose and flop around. It would affect the operation of your lighter. It would affect the timing of your lighter. If the friction were great it would delay the release, because it would add a load to your thermostatic spring seeking to release it. If it were loose it would relieve the load to a certain extent. If it

were too lose it might increase it again, because of overhang there. If it is an overhang apparatus hung on a bearing on one end, it would interfere seriously with the consistent operation of your lighter, even though it was initially correctly adjusted.

Q. Now, I call your attention to the Cuno device Plaintiff's Exhibit 2 and to the Casco device Plaintiff's Exhibit 19, and ask you to compare the type of interlock between the movable parts in these two devices.

Mr. Huxley: I don't see that that is material if the Court please. I object to it on that ground. The question here is one of infringement of the patent—what the plaintiff's actual device is, that is, a comparison along these lines. I don't see that it has any materiality.

The Court: What is the purpose, Mr. Allyn?

Mr. Allyn: Well, I wanted to show, without leading the witness, what the distinction was between the two, to show that they are not equivalents.

The Court: What difference does it make? Isn't the real issue a comparison between the alleged infringing device and the patent?

Mr. Allyn: I will reform my question and ask Mr. Wolfson to compare the inter-engaging portions of the movable elements in Plaintiff's Exhibit 2, the Cuno lighter, with the inter-locking portions of the Cohen patent 2,117,232, known as the No. 2 Cohen patent.

[fol. 153] The Court: No. 2 is the alleged infringing device?

Mr. Allyn: Yes, sir.

A. In the Cuno device, in the normal inoperative position the heating element cup, which corresponds to No. 49 in Figure 2 in the Cohen patent, rests against a stop in the bottom of the socket and does not leave that position during the normal operation of the lighter, nor until the plug is completely removed. On the exhibit shown here there are two distinct positions of the heating unit cup and its associated parts—an inoperative position, in which it is out of engagement with anything in the socket, and an operative position, where it is held between the jaws of the thermostatic latching device at the bottom of the socket in a shallow position.

By Mr. Allyn:

Q. You just now referred to the Cohen patent?

A. The Cohen patent. The Cuno device has no such corresponding positions. There is only one position in the socket in which the heating element and its associated parts, which are all of the plug except the sliding contact and the knob carrier, remains stationary, the knob carrier and the switch member alone moving from operative to inoperative. In the Cohen device the thermostatic latching member must conform to the heating element cup. It is limited in its shape and structure by that cup. In the Cuno device the latching member has no other function, and it and the corresponding thermostatic latch can be made of any desired shape to obtain the best results.

In the Cohen device the latch member necessarily engaging the heating element cup, which is the outermost part of the plug, is limited in longitudinal extension without unduly deepening the socket. In the Cuno device the thermostatic latching member, reaching back to a part remote from the unit plug, may be made of a longer length, more flexible, more desirable in operating characteristics, without unduly deepening the socket.

By Mr. Allyn:

Q. Please point out what you mean on this Exhibit 23 about that length and location of the thermostatic member.

A. The thermostatic member is in both devices and in a device of this sort held against and fastened to the lower end of the socket tube. If your device engages the unit cup it engages the thing nearest to the bottom of the socket tube unless the socket tube, for purpose of making it longer, is extended down bodily and the unit left hanging in the air.

Now, with the Cuno device, the thermostatic arm reaches back to an intermediate switching member and can be made longer and more flexible, gives you wider range in design, and better operating characteristics.

Q. What about the shape of the latching portion of the thermostat member in the Cuno automatic device?

A. It is made to give us the best latching and releasing action without any limitations imposed by the fact that the corresponding latching member has to do something else beside latch. I believe I mentioned that point before.

Q. In the Cohen patent, 2,117,232, has the spring 37 any effect upon the contact between the spring tongue 50 and the socket and the rim 45 on the plug?

A. None whatsoever. 45 on the plug?

Mr. Huxley: This.

The Witness: That is 45. No, none whatsoever. That is frictionally held only by the lanced-out finger 50. And the tension of the spring has no influence whatsoever on it that I can see.

[fol. 155] By Mr. Allyn:

Q. In the Cohen patent 2,140,311——

The Court: The first Cohen?

Mr. Allyn: The first Cohen, yes, sir.

By Mr. Allyn:

Q. (Continuing.) On Page 1, Column 1, line 15 to 30——

The Court: I can't hear you.

By Mr. Allyn:

Q. I am sorry. Page 1, Column 1, lines 15 to 30, it is stated: "Heretofore it was proposed to do this by providing parts of the automatic control for the circuit, some on the holding device and some on the igniting unit, with the result that these separable parts had to be made to match each other in each particular cigar lighter for best results, and hence the igniting units and the holding devices, respectively, were not interchangeable with other like igniting units and holding devices.

"According to the present invention, this difficulty is obviated by so arranging the means for automatically controlling the circuit supplying current to the heating element and restoring the circuit to normal open-circuit position, that they are carried entirely by solely one and the same of the two separable parts of the cigar lighter."

Do you find any such construction in the Cuno automatic lighter, Plaintiff's Exhibit No. 2?

A. No, sir, absolutely not. One part of the circuit controlling device is in the socket. The latch on which it acts is in the plug.

Q. Do you recognize what I now show you?

[fol. 156] A. That is a Cuno automatic lighter which has been provided with an extension of the insulating tube be-

yond the bezel of the socket, and with a switch button for operating the contact closing parts projecting through that at the end of that. The operating parts are standard Cuno automatic lighter parts, with an extension button to provide for its being operated through the longer bakelite piece.

Q. Won't you please show the Court how that operates?

A. In this case you merely press the button and the parts latch. When the thermostat heats up and releases, your button snaps out to its previous position. This is a standard Cuno lighter with an extended bakelite sleeve, and the button for operating the sliding switch member.

Mr. Huxley: I think we object to that as immaterial. I do not quite see the materiality of taking a device and modifying it. That is not the accused device here. I do not see any materiality.

Mr. Allyn: It is explanatory of what we regard as certain important distinctions in our device over their device, over their patents.

Mr. Huxley: Maybe that would be an infringement. Maybe it would not. We do not know. But the issues here are limited to a particular device.

Mr. Allyn: My friend, I know, is trying to urge—I do not want to put words into his mouth, but he has done so in his brief, I take it—that in the Cuno device we have two positions of the plug in the socket. I contend we have only one position, and that is important in connection with certain of the claims in suit. Now, if we have two positions, that is one thing. If we have only one position, that is quite a different thing. And we have quite thoroughly demonstrated, I think, that in the Cuno device like Exhibit [fol. 157] 23 and in Plaintiff's Exhibit No. 2, we have but one position of our plug. And that the separate sleeve which slides inside to make contact with these fingers does not answer the claims of the patent.

The Court: Why can't you argue that without injecting the synthetic exhibit?

Mr. Allyn: It is explanatory only. It is only explanatory, to show that the operation is identical with the device that Mr. Wolfson has before him, with the exception of the fact that the body is extended to form a knob outside the socket. And we still have the sleeve. And we can show that the body is interchangeable with the regular parts of the socket, of the plug of the Cuno device.

The Court: After all, is this anything more than an animated model such as you used?

Mr. Allyn: That is exactly what it is.

Mr. Huxley: The animated models are made exactly in accordance with the various patents and the various devices. This is a modification, and I do not see that it has any bearing on the question as to whether the accused device does or does not infringe. I do not see any materiality. We have complained of a certain device that is now before the Court. Now they take another device and modify that, and I do not see that that has any bearing one way or the other. Maybe that infringes, too. But the question is whether the one we have charged infringes.

The Court: I will sustain the objection.

Mr. Allyn: But it seems to me, your Honor, it is just as pertinent as their so-called acting models that they have produced here to explain.

The Court: Those were received, at least, with the understanding [fol. 158] standing that they were faithful reproductions of whatever they were intended to represent. This is not a reproduction of anything that is in issue.

Mr. Allyn: I did not understand that they were accurate reproductions. For instance, that device——

The Court: Please let us not go back on the record. My understanding was that they were not perhaps scaled reproductions.

Mr. Huxley: That is our understanding.

The Court: But faithful mechanical representations.

Mr. Allyn: I think this is a faithful representation of the defendant's device, with these modifications Mr. Wolfson has mentioned.

The Court: The modified device is not in issue. You have Exhibit 2 which is concededly a defendant's structure. I do not see any reason for this. I will adhere to my ruling.

Mr. Allyn: Then I will ask leave, I think, your Honor—realizing your Honor's ruling against me on it—that your Honor will receive a drawing of the device just mentioned under Rule 43.

Mr. Huxley: The same objection.

The Court: What is Rule 43?

(Clerk Pickett hands book to the Court.)

Mr. Allyn: Rule 43, as I recall it, provides for the admission of evidence, so to speak, over the objection of the Court.

The Court: What subdivision?

Mr. Huxley: (c).

Mr. Allyn: Yes, the record of excluded evidence is (c), at the bottom of page 56 of our copy. Then it goes on page 57, the middle of the top paragraph.

[fol. 159] The Court: I do not see that it comes under that at all.

Mr. Allyn: It says, "In actions tried without a jury the same procedure may be followed, except that the court upon request shall take and report the evidence in full * * *."

The Court: What procedure are you referring to?

Mr. Allyn: Procedure under (c). It says, "In an action tried by a jury, if an objection to a question propounded to a witness is sustained by the court, the examining attorney may make a specific offer of what he expects to prove by the answer of the witness."

The Court: You have made your offer.

By Mr. Allyn:

Q. I show this drawing to the witness and ask him to explain what it is.

Mr. Huxley: Same objection.

The Court: He is entitled to explain what it is.

A. This is a standard Cuno automatic device in all its operative parts, with the exception of the fact that the bakelite tube surrounding the working parts has been lengthened out and provided with an outer wall through which a button projects, and an extension of that button engages the standard knob carrier which is always present on the Cuno device when used with a metal knob.

Mr. Huxley: In view of the answer, I object to it as immaterial and move that the answer be stricken.

[fol. 160] The Court: I will deny the motion.

Mr. Allyn: I would like to offer in evidence that drawing.

Mr. Huxley: Same objection.

Mr. Allyn: Explanatory.

The Court: Objection sustained.

Mr. Allyn: I did not understand you.

The Court: Objection sustained.

Mr. Allyn: Then may I ask that that be received?

The Court: You can mark it for identification, of course.

Mr. Allyn: I so request, please, that it be marked for identification, it having been identified.

(Defendant's Exhibit N for Identification: Drawing of Cuno automatic cigar lighter modified.)

By Mr. Allyn:

Q. When the device of the plaintiff's, Exhibit 2, the Cuno lighter, is operated is any sound made when the release occurs?

A. There is a distinct click.

Q. Is that intentional or not?

A. That is inherent in any device where two relative moving parts come together.

Q. Would that be the case in the Mead device?

A. It would.

Q. Now, yesterday Mr. Cohen stated that his company, as I recall it, has spent something like \$500,000 for equipment for their automatic lighter. Do you know approximately what the tools and equipment required by the Cuno Corporation cost?

A. I would estimate not more than \$12,000.

Q. What type of equipment do you use for the production of your automatic lighter?

A. We are using the same machine tool equipment we had [fol. 161] for producing the manual type lighters. The expense incurred was largely for new dies, bakelite molds, and things of that sort.

Q. The sales of the Cuno Company in 1938 in non-automatic lighters decreased materially. Do you know any particular reason for that decrease in the sales of the Cuno non-automatic?

A. In the first place, 1938 was not a so-called good year. In the second place, I believe that it was in 1938 that the Ford Motor Car Company, one of our largest customers, started to make a part of their own lighters.

Q. And part of the supply was made also by The Casco Company for the Ford Motor Car Company, as testified by Mr. Cohen yesterday?

A. The information given us by the Ford Motor Car Company was that they proposed to make fifty per cent of the lighters and divide the other fifty per cent between Casco and ourselves.

Mr. Allyn: If your Honor please, I should like to have Mr. Wolfson explain certain features of some of the patents that are included in our exhibit of the prior art. This copy is the official exhibit and this is the other set.

The Court: I think I have one set.

Mr. Allyn: I don't think you could have one set of them. I think these are the only two.

The Court: I have one. Go ahead.

Mr. Allyn: I hope it is the same as this one.

The Court: It starts with Hammarstrom.

Mr. Allyn: That is the first, yes, sir. I did not know we had so many copies of them.

By Mr. Allyn:

Q. Mr. Wolfson, I wish you would look at the Hammarstrom patent 493,380 and state briefly——

[fol. 162] The Court: Just a minute before you frame your question. Will you state against what you are citing this reference?

Mr. Allyn: This reference is cited to show a thermostatic latch member having two oppositely disposed arms, which balance the pressure against an intermediate switch member.

The Court: Against which patents and claims in suit are you citing?

Mr. Allyn: This applies particularly to claim 3 of the Cohen No. 1 patent, which requires that the thermal responsive means be in co-axial alignment with the plug.

Mr. Huxley: Is this in anticipation?

Mr. Allyn: The state of the art.

The Court: Very well. Go ahead.

Mr. Allyn: And other claims where that particular feature is involved.

The Court: All right.

Mr. Allyn: May I ask my question now, sir?

The Court: Yes, go ahead.

By Mr. Allyn:

Q. State what the element I is in that Hammarstrom patent.

A. The element I appears to be a part of a circular-shaped thermostatic member. It is supported along one part of

the circle, the other side being open, permitting latching ends which engage the element J.

Q. Do you find any similar element in the Cohen No. 1 patent?

A. Well—

Mr. Huxley: I think that that is calling for a conclusion. If he will state what there is in the Cohen patent, we will have no objection to it, but that isn't very definite.

[fol. 163] The Court: He says "Do you find?" I take it the question was equivalent to an inquiry as to the witness' opinion.

Q. It would appear to me that the member 32¹ or 34¹ with the member 65¹—The hole is generally circular-shaped. The thermostatic member or member with arcuate arms corresponds to that element I in the patent.

The Court: I wish, Mr. Allyn, that when you have the witness refer to a reference you would let him use the pointer. It is hard for me to pick these numbers out of the firmament, as it were.

By Mr. Allyn:

Q. Now, as to the Harley patent 852,326.

The Court: Are you through with Hammarstrom?

Mr. Allyn: Yes, sir.

The Court: Did opposing counsel want to cross-examine on Hammarstrom?

Intermediate cross-examination.

By Mr. Huxley:

Q. Which is the thermostatic element in the Hammarstrom patent?

A. Looking at the drawing, in accordance with drafting convention, I would say it was the element marked with the letter "I."

Q. The letter I?

A. Yes.

Q. You think that that shows an operative disclosure?

A. I think it would make an excellent thermostatic mouse-trap.

Q. An excellent what?

A. Thermostatic mousetrap.

[fol. 164] Q. Do you think that would operate all right in the way it is supposed to operate in opening and closing the circuit?

A. I think it would operate to open the circuit, and I believe that is all it is intended to do.

Q. You think it would operate all right?

A. If sufficient current were supplied to it, I believe it would.

Q. Is there any description in the patent as to the character of the thermostatic element I?

A. I have no recollection of having seen any except in lines 87 to 92 in the right-hand column.

By the Court:

Q. What page?

A. Page 1 of the patent, your Honor.

Q. Go ahead.

A. "The inner ring of the completed, welded ring being composed of metal which has greater expanding power under heat than the outer one, consequently causes the two ends to be forced out laterally with the result above stated."

By Mr. Huxley:

Q. You think that that would disclose enough to any one familiar with these things to enable him to make an operative structure?

A. The further details would be indicated by the nature of the use to which it is to be put. Here it says, a strong electric current—line 73 of the same page.

Q. Suppose there was a strong electric current. In what shape would the member "I" be made if it was a strong electric current?

A. It would have to be made so as to have the proper electrical resistance or conductivity not to be destroyed by that current and the proper relative expansion between the two parts of the thermostatic metal, so as to open.

[fol. 165] Q. Suppose it was a weak electric current, then what?

A. It would not operate.

Q. Suppose you had a weak current?

A. If you had a weak current and wanted to operate it you would have to make the element itself of a sufficiently

high electrical resistance so that the weak current would heat it sufficiently to cause it to act, and you would want to make it of a relatively high expansion between the low and high extension side, so it would act quickly under a low heat.

Q. You think that an ordinary engineer would be able to work that out all right to take care of strong current and weak current?

A. I think the conditions of service would indicate to him what the thing would have to do.

By the Court:

Q. Does this amount to anything more than this? If it were a low current the ring that is part I would have to be of high-temperature metal, and if it were a strong current the lower temperature would suffice?

A. That, your Honor, is one of the variations possible in thermostatic metals. There are high and low temperatures.

Q. Isn't that the substance of the testimony you have just given?

A. I also mentioned resistance—the electrical resistance, which is another important factor.

The Court: I see.

Mr. Huxley: That is all.

Direct examination (continued).

By Mr. Allyn:

Q. In the Harley patent 852,326—

Mr. Huxley: May we ask what this patent is for?

[fol. 166] Mr. Allyn: This patent was cited against Mead's.

The Court: What claims?

Mr. Allyn: It was cited against Mead's original claim 5, which is not in suit but which shows what the Patent Office had before it when it acted on the Mead patent.

Mr. Huxley: Is this to show the state of the art?

Mr. Allyn: Right, showing an automatic thermostatically-opened circuit in one form of electric heater.

Mr. Huxley: And pertinent to the Mead patent in your judgment, is that correct?

Mr. Allyn: Pertinent to the principle of the disclosure of Mead.

The Court: Very well.

By Mr. Allyn:

Q. What is the element 13 in that Harley patent?

A. The element 13—

By the Court:

Q. What figure?

A. Figure 4 is described as being made of thermostatic materials, such as two strips of different metals properly connected together. It is a thermostatic element in other words.

Q. For automatically opening the circuit?

A. That is what it does there.

Q. Of course, in this patent there is no complication of any other spring involved?

A. It would simply serve to separate the two contacts under heat and close them again when the heat dropped.

Q. In other words, there is no latch?

A. No latch.

Q. And no spring?

A. And no spring.

[fol. 167] Mr. Allyn: That is the case in claims 2 and 3 of Mead's. There is no latch and no spring. Does your Honor want to proceed the same as before?

The Court: Yes. Is there anything further to bring out.

Intermediate cross-examination.

By Mr. Huxley:

Q. It is a so-called hunting thermostat that opens the circuit, and when the heat goes down it closes it?

A. I should describe it as flasher, flashing on and off. It might be used in connection with an electric lamp to flash it on and off.

Q. Was there anything said in the specification in regard to the character of the element 13?

A. I don't see anything. I don't remember anything except right there where it says it is made of thermostatic material such as two strips of different metals properly connected together.

Q. If the temperature was a high one to which the thermostat was subjected, I suppose one kind of thermostatic metal might be used, and that if the temperature was a low one where it was desired to close it, some slightly different characteristic of thermostatic metal would be used?

A. The conditions would govern the choice of metal, and experimentation would determine which metal was the best. You have a general specification of metal due to the conditions, and from that point on you have to experiment to find the best one.

Q. I notice that this patent goes back to 1907. Had you graduated from the Massachusetts Institute of Technology by that time?

A. No, I had not.

Q. What was your year?

A. 1913 and 1914—1913 in mechanical, and I took an extra year in electrical.

Q. To make some definite date: Did you have a knowledge of bimetallic thermostats at that time?

A. I wasn't working in that art at that time.

Q. You were not working in that art, but did you know about them?

A. Oh, yes, certainly.

Q. And you knew that those were for high temperature and low temperature and different kinds, according to different requirements, is that right?

A. I wasn't working in the art. I knew that there were bimetallic thermostatic metals on the market. I didn't know anything about their characteristics, because I had never used them in any device on which I worked at that time.

Q. But you did know that they were common things on the market?

A. I knew that there were thermostatic devices on the market.

Mr. Huxley: That is all.

Direct examination (Continued).

By Mr. Allyn:

Q. Now, in the Denhard patent 1,143,572, what controls the circuit?

The Court: What is this cited against?

Mr. Allyn: This is cited again to show the state of the art of thermostatic control switches.

The Court: What claims?

Mr. Allyn: This applies particularly to the Mead device, limiting claims 1, 2, 3, and 11.

The Court: All right.

By Mr. Allyn:

Q. Briefly mention what controls the opening of the circuit.

A. Well, there is a thermostatic element there anchored at one end and free at the other. The two different metals [fol. 169] are indicated in Figure 1 by No. 61 and 62. An extension of that thermostatic arm on the free end slides another member up and down. The member has a series of numbers, 67, 56. It is a composite strip—a latching strip.

In order to operate the device you have got to push the button 33, which comprises spring 30 and which has a peculiar double cone-shaped member there on which rides a coil spring—a so-called sphincter spring—and as you push the plunger 33 in, that spring opens out. The parts associated with that spring ride up on the conical member and slide down on the other end and make a quick contact. Now, the thing is latched. Spring 33 is compressed. When the heating element in the iron gets hot, your thermostatic member warps, pulls down the long latch member with the various numbers on it, which interlocks with slot 57 in the plunger 33, releasing it under the influence of spring 30 and throwing the switch member back over the double cone-shaped actuating part, so that you get a quick break in the circuit.

By the Court:

Q. Contact is between 24 and 31?

A. That would be. The members in Figure 3, I believe, are indicated by 26 and 27 up near the handle there, the upper end, on opposite sides. That bridges across between those contact members.

Q. What is the function of spring 24, the sphincter spring?

A. Its function is, it is like a toggle. Once it has passed its mid-point it works quickly down the slope of the conical rod. It is a quick make and break.

Q. Yes, but what does it do when it gets there?

A. It in itself has no other function than to cause the thing to act quickly once it has passed mid-position, to [fol. 170] cause the contact-bridging member 25 to act quickly once it has passed its mid-position. In such a device as is shown here there is considerable current involved. Unless you make it and break it quickly, you get bad arcing and burning.

It is a snap-switch of a kind.

Mr. Huxley: Has your Honor another question, or may I ask one or two?

By the Court:

Q. Referring to Figure 1, I do not know that it is very important. It is hard for me to visualize the contact that makes and breaks. Refer to Figure 1; 26 is evidently one contact, is it not?

A. Yes, sir.

Q. Does the other contact show in Figure 1?

A. No, sir. It is in the section that has been cut away. It shows in Figure 3 as 27, a duplicate of 26 on the other side of the operating rod.

Q. On the other?

A. On the right-hand side of Figure 3 in the same relative position as 26, to the vertical center line of Figure 3.

Q. Would it be the bar or abutment shown in Figure 21 as 28?

A. 28 is the part on the moving switch member which bridges 26 and 27.

The Court: All right. Go ahead.

By Mr. Allyn:

Q. What actuates the thermostatic release in that device?

A. The heat.

Q. From what?

A. From the heating element which is adjacent to it.

Mr. Allyn: That is all.

[fol. 171] By the Court:

Q. Is there a reference to the heating element?

A. There is a reference 4. That is to the element itself, or the insulation between it. I think it is the element itself 4. The resistance unit 4, yes, sir.

By Mr. Allyn:

Q. Look at the element 62, 63, and see if that is not a thermostat.

A. That is the thermostat.

The Court: I was asking as to the heating element.

Mr. Allyn: I beg your pardon.

The Witness: The heating element is 4.

By Mr. Allyn:

Q. The heating element and the thermostat are right adjacent?

A. They are adjacent.

Mr. Allyn: That is all.

Intermediate cross-examination.

By Mr. Huxley:

Q. As a matter of fact, what is the element 6? That is a piece of mica, isn't it?

A. I will have to have that patent again.

Q. Insulating material?

A. It is drawn as insulating material.

Q. And it is so described in line 66 of the specifications, line of the specification?

A. One or more layers of insulating material.

Q. One or more layers of insulating material 6, preferably comprising sheets of mica which insulate the same from [fol. 172] the bottom of Section 1. Now, between the resistance element and the thermostat, which is the bimetallic thermostat, which is 61 and 62, there is a strip of insulating material, isn't there?

A. Correct.

Q. Now, on Page 3 of the specification, beginning at line 106, it states as follows: "In other words, it is the temperature of the working face of the iron that it is desired to regulate, and the thermostat will naturally function with

the greatest efficiency when located contiguous to the working face."

The Court: Where is that?

By Mr. Huxley:

Q. That is page 3, beginning line 106, 106 to 110. As a matter of fact, Mr. Wolfson, this device is simply a safety device to prevent the iron from getting too hot, isn't it?

A. It opens the circuit.

Q. It opens the circuit, and in Figure 1 the circuit is shown—I mean the parts are shown in open position, aren't they, open-circuit position?

A. They are shown in open-circuit position.

Q. Yes, and if you shoved the member 21 in then this part shown as 25 and 24 would go over to the left and slide down the beveled surface at the left there, one of the beveled surfaces being marked 20.

A. Yes, sir

Q. Then you close the circuit that way?

A. It is a quick make-and-break device.

Q. A quick make-and-break device. And all it does is it opens the circuit to prevent the iron from getting too hot?

A. And the circuit has to be closed manually.

Q. It is merely to prevent the iron from getting too hot, isn't it?

A. That is the purpose of thermostats in flat-irons, as I understand them.

[fol. 173] Q. But the purpose here is to prevent this surface from getting too hot, the iron from getting too hot, isn't it?

A. Certainly.

Mr. Huxley: Yes. That is all.

Direct examination (Continued).

By Mr. Allyn:

Q. Isn't that one of the purposes of the thermostat in the patents in suit?

A. If it didn't, the unit would burn out.

The Court: The answer, I take it, is "Yes."

By Mr. Allyn:

Q. Turning to the Stahl patent 1,372,207.

The Court: That is cited against what?

Mr. Allyn: This is cited to show the use of thermostatic metal as a latch per se.

Mr. Huxley: Not as an anticipation, but to show the state of the art.

Mr. Allyn: That is correct.

The Court: What patents and claims? I suppose you confine it to Cohen.

Mr. Allyn: This is applied to the Cohen device.

The Court: Both Cohens.

Mr. Allyn: I think Mr. Cohen has emphasized it particularly with respect to No. 2 Cohen patent, but it applies also to the No. 1 Cohen device. It shows a use of that, as I so understand it.

By Mr. Allyn:

Q. Mr. Wolfson, will you glance at that and state what the elements 15, 13, 10 and 23 are?

[fol. 174] A. 15, 13, 10 and 23. 15 and 13 and 23 are all parts of one piece of thermostatic metal bent so as to form a latch. 20—10 is the abutment for that latch. It is a pin on which that latch rests in the inoperative position.

Q. What is this latch 10 carried by?

A. Latch 10 is carried by a plunger 12. The operation is that you press the plunger 12 and the pin 10 rides along the back 23 of your thermostatic piece, passes it by. When the plunger 12 is released, the pin 10 comes up on the under side of the latch 15 and stays there until the thermostatic metal gets out of the way under the influence of spring 9.

Mr. Allyn: That is all.

Intermediate cross examination.

By Mr. Huxley:

Q. What heats the thermostat?

A. The thermostat is heated by a strip of resistance metal variously indicated at 19 and 22 on both figures 1 and 2.

Q. It is that part wound round?

The Court: It is a coil, isn't it?

By Mr. Huxley:

Q. It is a coil?

A. It is a winding around the thermostatic metal.

Q. And that is correct. This is simply a circuit-breaker, isn't it?

A. It would serve to interrupt an electrical circuit, under the influence of current passing through the thermostatic metal.

Mr. Huxley: That is all.

Mr. Allyn: Does your Honor have any questions to ask?

The Court: No.

[fol. 175] Mr. Allyn: Now, the Morris patent, 1,376,154, anticipates claim 11.

The Court: Just a minute. All right, anticipates what?

Mr. Allyn: Claim 11 of Mead, and otherwise shows the state of the art tending to invalidate any broad interpretation of Mead's claims 1, 2, and 3, and the claims in suit of the two Cohen patents.

Direct examination (Continued).

By Mr. Allyn:

Q. You have seen this Morris patent before?

A. I am quite familiar with it.

Q. That is one of the patents the Cuno Company was licensed under?

A. It is.

Q. In that device, if there was no spring 28 in the socket and you inserted the plug all the way in, what would happen?

Mr. Huxley: I object to that. Possibly we would get ahead quicker if we had an explanation of what the patent is first, not a hypothetical question.

Mr. Allyn: I thought it was so obvious, the construction and operation, that I did not want to waste time. If Mr. Huxley does not understand it—

The Court: It is doubtless obvious to the witness, but I think two or three weeks ago it was obvious to me after some study, but it has slipped from my mind. It would be helpful to have just a brief description.

By Mr. Allyn:

Q. I would like to ask you, then, to describe briefly what you think this patent shows.

[fol. 176] A. It shows a plug and socket type of lighter. Figure 1 shows the plug practically in section. It has a carbon heating element 16 as shown here. The plug fits into a socket shown in Figure 3.

By the Court:

Q. Just a minute. Isn't the carbon heating element 22 in Figure 1?

A. 22, as I see it, is a holder for one end of the carbon, a spring-pressed holder for one end of the carbon, to keep it in good electrical contact with the other parts.

Q. What is the carbon itself?

A. As I see it, it is numbered 16 out there.

Q. What figure?

A. Figure 1.

Q. 16?

A. Out in the open there, toward the left-hand side above the center line.

Q. Which is the inner end of the plug shown in Figure 1, the left or the right?

A. The left. The innermost portion is marked 17.

Q. And the carbon is carried inside the cylinder 17?

A. Inside the cylinder 17.

Q. I have got it. Now, go ahead.

A. — in this particular disclosure.

Q. Go ahead.

A. The plug is inserted in the socket, which in the usual manner is grounded.

Q. Does that show? Where is the socket?

A. In Figure 3. Figure 3 shows the receptacle for the plug or the socket. It shows a flange, abutted against something that is supposed to represent a dash, probably.

Q. Which is the open end of the socket?

A. The open end of the socket is——

Q. The right or left?

A. The right.

Q. What is this knob 3 that seems to close the other end?

A. That is screw 3. That is a side view of a screw head. That is also shown in Figure 4 as No. 3.

[fol. 177] Q. I see.

A. The plug is inserted into the socket.

Q. Go ahead.

A. Post 24 of the plug is engaging groove 25 in the socket.

Q. What figure are you looking at now?

A. The plug is Figure 1. The socket is Figure 3. The assembly is incompletely sketched, so I am not referring to that. Figure 1, the post 24 on the underside of the holder, fitting into groove 25 in the underside of the socket tube in Figure 3—

Q. Go ahead.

A. Permitting longitudinal movement of the plug in the socket. To operate, you push on the handle 15 in Figure 1 on the very right-hand side, and the left-hand end of the plug 17 meets the contact 7 in the bottom of the socket shown in Figure 3 and also in Figure 5, which is the live contact. The circuit is then from 17 through the carbon, to the carbon-holder 13, to the—

Q. Where do you find 13, what figure?

A. About midway of Figure 1 on the lower side.

Q. Go ahead.

A. Through to number 10 on that figure, which is an electrical engagement with the socket tube in Figure 3, No. 1, and then the ground.

When you release pressure on the handle the thing springs into inoperative position in the socket, in which the two contacts 17 and 7 are—17 on the plug and 7 on the socket, are out of engagement.

Q. No thermostat?

A. No, sir.

By Mr. Allyn:

Q. In the form shown in Figure 7 the end of the carbon 16 extends out through the outer end of the plug, does it not?

A. It does. I believe that Morris stated that was for purposes of lighting a pipe or something of that general nature, as an alternative construction.

[fol. 178] Q. Morris on page 2, lines 4, et seq., says he prefers to provide means for holding the incandescent element 16 out of electrical connection.

The Court: Where is this, Colonel? You said page 4.

Colonel Allyn: I thought I said page 2.

The Court: What line?

Colonel Allyn: Page 2, lines 4, et seq., Morris says: "It is preferred to provide some means normally for holding the incandescing element 16 out of electrical connection with the terminal 7 and to this end a helical spring 28 may be arranged within the socket member 1 to cooperate with the removable plug 10 about the bushing 18 in the manner shown in Fig. 5, thus holding the terminal 17 out of electrical connection with the terminal 7."

By Mr. Allyn:

Q. If the spring 28 were omitted and you pushed the plug in, what would happen?

A. The lighter would remain in circuit and burn out.

Q. When you add the spring 28, what happens?

A. When you release the knob, even though you do not remove the plug, the lighter returns to inoperative position automatically.

Q. In other words, that has automatic means for opening the circuit upon release of pressure on the knob.

A. That is what would happen.

Q. I show you a sample and ask you if you will please tell the Court what that is.

A. That is marked "Surelite," Surelite Products. It is a lighter as shown in Morris, with the addition of Adams' handle. It is a Morris type of lighter, to which has been [fol. 179] added a thermostat so that when you push the knob in it locks the lighter in the "on" position, and when the carbon element heats, the thermostat becomes heated, flexes, and the lighter is released into its inoperative position. A simple thermostat actuated by heat from the radiation and convection from the heating element, in this particular example.

Q. I notice some solder in one side of the socket. Please tell the Court what that is and how it happened to get there.

A. That was put there to seal off a J-slot member which was in this lighter to provide for locking it by rotation in the inoperative position. It is shown in Morris as 27 in Figure 5, which was an extension of the groove 25 shown in Figure 3. It was provided as a safety feature, I believe, in Morris, so that if anyone leaned against the knob the thing would not go into operative position, not having anything to open the circuit again when it got hot.

Mr. Allyn: I would like to offer that as an illustration of the Morris device, showing the simplicity of the addition of a thermostatic latch.

Mr. Huxley: I object to that as immaterial. It is not the Morris.

The Court: Sustained. I do not think it is evidence.

Mr. Allyn: Am I not justified in asking the witness what it would be necessary to do to the Morris device to add a thermostat, and what would be the effect?

The Court: I think perhaps you could do that.

Mr. Huxley: Isn't this a pure matter of argument?

The Court: That is exactly my view. I think it would be entirely proper for you to take that exhibit in final argument and say, "It is our contention that Morris [fol. 180] plus this, or Morris plus that, will produce such and such a result, and here is an illustration of our argument of it." That does not change the argument into evidence.

Mr. Allyn: I am satisfied to do that, but I thought to put a man skilled in the art on the stand and to subject him to examination by the Court and by counsel for the other side, might be helpful.

The Court: I do not think it is evidence.

Mr. Allyn: Then I understand that this is not admitted.

The Court: If, as I understand, it is not a specimen of some prior commercial art.

Mr. Allyn: It is a specimen with the addition——

The Court: With modifications?

Mr. Allyn: It is an actual specimen with the addition of a thermostat. That is correct.

The Court: I think because it has additions it is not evidence. It is argument only.

Mr. Allyn: Very well.

By Mr. Allyn:

Q Now, Mr. Wolfson, what would it be necessary to do, in your opinion, to that device shown in the Morris patent, to make it an automatic thermostatic lighter?

Mr. Huxley: I object to that on the same ground.

The Court: I think it is a proper question for an expert. I understand throughout that he is now speaking of a matter of opinion rather than of fact. I will admit the question.

A. Of course, you have to provide an actual thermostatic member with a latch of some sort which would engage with some part of the plug to hold it in the "on" position. In order to make your thermostat member effective, it is necessary to open up the socket No. 1 in Figure 3 of Morris so that the heat of the element can have more ready access to the thermostat. For that reason, it is also necessary to do away with this safety recess 27 that Morris has put in there.

By the Court:

Q. In what figure?

A. Figure 5. So that the plug can only go in the socket in one position, somewhat similar to the Mead lighter, so that the opening in the plug which gives access to the heating element is opposite the opening which you have made in the shell under the thermostat. It is also necessary to provide some form of a detent in the socket 2, co-acting with some sort of a corresponding recess in the plug member so that on release, under the influence of the spring 28, Figure 3, the plug would not jump completely out of the socket.

I think that—and providing the necessary electrical connections for your thermostat in the circuit—are all that is required.

Mr. Allyn: Are you through?

Mr. Huxley: I think I have no questions.

The Court: All right, let us go on.

Mr. Allyn: I turn to the Langos patent 1,697,686. This is also referred to, if your Honor please, to show the coaxial arrangement.

The Court: Could you wait just a minute till I find it, Colonel? (Pause) I have it.

Mr. Allyn: This is mentioned to show the disclosure of coaxially disposed members in a cigar lighter socket, as bearing upon the claims of the two Cohen patents which [fol. 182] involve axial and so-called coaxial relations, as showing the state of the art.

Mr. Huxley: State of the art only?

Mr. Allyn: Yes, sir.

By Mr. Allyn:

Q. Now, Mr. Wolfson, what are the elements 9-9 in this patent?

A. They are spring members co-acting with the groove 27 in the plug member B in the shell 17 on the plug member B, to retain it in open-circuit position and in axial relation with the contact in the base, there being little or no bearing in the base itself for the member other than these spring fingers.

I think that is more clearly shown in Figure 5 than anywhere else.

Q. At the bottom of Page 1, Column 1, and the top of Column 2, Langos refers to three rivets 8, which rivets also act to hold corresponding springs 9.

A. That is correct.

Q. Does that mean that there are three springs?

A. That means that there are three springs because there are three positions shown for the rivets 8.

Q. And they would be arranged around?

A. Symmetrically.

Q. Symmetrically around the axis of the socket and the plug?

A. That is what they are shown there.

Q. In all of these plug type lighters, the plug member is coaxial with the socket. Is that not right?

A. All of them that I know of.

Q. And that is true in the Mead patent, is it not, that the plug and the socket are coaxial, in the Mead patent?

A. Certainly.

Mr. Allyn: That is all.

[fol. 183] Intermediate cross-examination.

By Mr. Huxley:

Q. Now, in the representation shown in Figure 4, the device is in the open-circuit position, is it not?

A. It is.

Q. The removable portion is on the lower part of Figure 4, is it not, the part that you take out, take off?

A. No.

Q. No, it is on the upper.

A. No, the removable portion is on the upper.

Q. It is on the upper portion of Figure 4, the part that is removed?

A. The part marked "B".

Q. When the part marked "B" is moved into circuit-closing position, it has to be held there in order to keep the circuit closed, does it not?

A. That is correct.

Q. There is no thermostat shown in this device, is there?

A. This is a non-thermostatic lighter.

Mr. Huxley: That is all.

Direct examination (continued).

By Mr. Allyn:

Q. In your opinion, Mr. Wolfson, would it require any more than mechanical skill to add thermostatic latches to this device to hold it in the closed-circuit position?

Mr. Huxley: I object to that. As to whether a thing is mechanical skill or whether it is invention I think is solely for the Court to decide.

The Court: Sustained.

Mr. Allyn: I would like to refer to Copeland 1,844,206.

The Court: This is cited against Mead?

Mr. Allyn: That is cited first against Mead?

Mr. Huxley: For what purpose?

Mr. Allyn: For the purpose of anticipating any broad [fol. 184] interpretation, invalidating any broad interpretation of claims of the Mead patent.

Mr. Huxley: Isn't it a fact that the defense pleaded in reference to Copeland is prior invention and prior knowledge as indicated by the filing date of the application?

Mr. Allyn: That is true.

Mr. Huxley: And the patent of which was issued long subsequent to the time when Mead filed his application. That is correct, is it not?

Mr. Allyn: They were co-pending in the Patent Office, and Copeland issued after without any interference.

Mr. Huxley: So the defense is prior knowledge and prior invention as indicated by the earlier filed application; is that correct?

Mr. Allyn: It is a completed invention as of the date of April 18, 1927.

Mr. Huxley: Yes. And pleaded for prior invention, prior knowledge.

Mr. Allyn: That is correct.

The Court: This is also cited against the Cohens?

Mr. Allyn: Yes, sir, as shown coaxially disposed igniter and socket members, and if I understand the broad contention of the plaintiff, a coaxially disposed thermostatic member. It is supported in equal distances on opposite sides of the center, and has a contact directly in the center, in the axis of the tube. That is in the form shown in Figure 2.

By Mr. Allyn:

Q. In this device, Mr. Wolfson, I wish you would explain briefly how the device of Figure 2 works.

[fol. 185] A. Well, in Figure 2 is shown dotted the outline of what appears to be a cigar, resting in the tube 11 against the heating element 14. This lighter is then in the inoperative open-circuit position. A thrust on the outer end of that cigar would cause the heating element 14 and its associated parts to pivot on the pin 22, and the rear contact of that heating element resting against the buckling spring 23 would push it past center to a buckled position in the opposite direction where it would rest against a contact on the thermostatic arm 24, pressing that arm down so that the contact on it, and the corresponding contact numbered 28 on the base of the mounting would close the circuit through both the heating element 14 and the heater winding on the thermostat 24. Now, after a passage of time had been sufficient for the current flowing through both the heater element 14 and the winding around the thermostat which are in series, had heated the thermostatic metal to such an extent as to increase its buckling tendency against the spring, buckling spring 23, it would throw that spring back to the open-circuit position as shown, provided, of course, that the thrust on the cigar had at that time been removed.

Q. What relation is there, if any, between the temperature of the igniter coil 14 and the thermostatic device?

A. It is a fixed relationship depending upon the relative resistance of the heating element and the heater winding around the thermostat. The same current passes through them both, and you would merely have to adjust the heater element winding so that it would not operate—the thermostat winding, pardon me—so that it would not operate the thermostat until the heating element had come up to satisfactory heat; and also, so that it would operate before the heating element had had an opportunity to over-heat and burn out. Once that proportion was fixed, it would so operate.

[fol. 186] Q. Is there in this device any radiation of heat from the igniter element, or convection of heat from the igniter element?

A. There could not help but be some, because of the relationship between the parts. The reason, main reason in my mind, for the winding around the thermostat, is that in this device a small amount of current only is required to operate the heating element. The heating element is not required to store heat as it is in a lighter where the plug itself is removed and used to ignite a cigar or cigarette. Therefore, the heat available, the total heat available, is less and an auxiliary winding would probably be essential.

Mr. Huxley: Is that all?

Intermediate cross-examination.

By Mr. Huxley:

Q. Mr. Wolfson, in connection with the Copeland showing, there is no removable igniter element carrying a resistance coil for the purpose of lighting a cigar, is there?

A. There is none shown.

By the Court:

Q. What was that?

Mr. Huxley: There is no removable igniter element with a resistance for the purpose of lighting a cigar.

A. Except that the whole base of the socket tube is a separate piece containing the igniting unit which could be removed if so desired.

By Mr. Huxley:

Q. That is correct. It could be removed for cleaning purposes and the like if desired.

A. It could.

Q. But there is no description or hint in the operation that in order to light a cigar there is a part that is removed [fol. 187] is there?

A. Nothing so stated in the patent, that I know of.

Q. In this patent, there is a draft constantly going upwardly, referring to Figure 2, for instance, going right up through the tube 11, isn't there?

A. That is quite true. There in all probability would be.

Q. And so mentioned in the specification, for example, between lines 14 and 17 of page 1. That is correct, isn't it?

A. That is correct.

Q. Now, in order to light the cigar, of course, the cigar is constantly held in engagement with the resistance 14, is it?

A. Right.

Q. 14. And during that entire lighting period the circuit is closed, is it not?

A. Correct.

Q. The draft which is going upwardly as I have just described and you have agreed, would carry any heat from the resistance coil up into the cigar, would it not?

A. It would carry some of the heat.

Q. Well, it would carry, by all odds, the bulk of the heat, wouldn't it?

Because if you put a cigar in this device, in order to light it effectively you have got to have a draft equivalent to a sucking in the mouth when one lights a cigar. That is true, isn't it?

A. No, sir, you have not.

By the Court:

Q. What?

A. You have not.

By Mr. Huxley:

Q. In other words, you think you could efficiently light the cigar without any draft?

A. Through the cigar. I know you could.

Q. But there is a draft described just the same?

A. There is a draft described in this patent.

Q. And that would take the heat of the resistance coil [fol. 188] away from the thermostatic element?

A. Except that which went through the metal parts of the element. My opinion is, wherever you have metallic contacts you have conduction of heat.

Q. Now, the operation of the thermostatic bar 24 is entirely controlled by that little coil of wire wound around it as shown in Figure 2, directly to the left of the lead lines from the No. 24. That is correct, isn't it? That is the way it is heated?

A. That is purely conventional. It shows a coil of wire.

Q. Yes. But the heating of the thermostatic bar is by means of something that is wrapped around?

A. A coil of wire.

Q. A coil of wire wrapped around the thermostatic bar itself. So it would operate as explained in the patent after a given time, wouldn't it? As stated for example on page 1, line 29, after the lapse of the required time.

A. That is quite correct.

Q. So that if it was an extremely cold day, for example, and the draft coming up through was at a very low temperature, the coil wound around this thermostatic bar would operate the bar itself by means of that coil after a given time, entirely irrespective as to the heat of the resistance coil itself, would it not?

A. No. Because if it was the same ambient condition, the same atmospheric conditions acting on the heating element would be acting on the thermostat and its coil.

Q. But the actual heat that operates the thermostatic bar is the heat from the coil around it?

A. Yes. But that is subject to dissipation, the same as the heat acting on the heating element through difference in atmospheric conditions. Once you have proportioned the two windings so that they would act together by means of the same current passing through both of them, they would always act together regardless of ambient conditions.

[fol. 189] Q. But you would simply establish such a relationship in the thermostatic bar. Certainly you will agree with me that it does not respond to the heat of the resistance coil 14, does it, to operate it?

A. No, but it acts responsive with, or responsive to the heat, because they are tied together inseparably by that relationship between the windings.

Q. But that is the only connection, isn't it?

A. That is the only connection.

Q. In this sort of a device I think you said there is no necessity of storing the heat, is there, in the resistance coil, because the circuit is closed all the time while the cigar is being lighted. That is correct, is it not?

A. That is correct.

Q. How soon would you judge that the resistance coil 14 would become incandescent in the Copeland disclosure there with the sort of a resistance wire that they have, that he has indicated?

A. From my experience with cigar lighters, both of the cord type and the cordless type, the non-automatic and the automatic, I should say that that would be a type of heating element which was well-known in the art, such as was used in the old reel type of lighters. Perhaps you could draw six or seven amperes and be so proportioned as to come up to heat in eight or ten seconds.

Q. Oh, less than that, wouldn't it? In that type? That was where the round resistance wire was used, was it not?

A. It all depends.

Q. Without storing the heat?

A. Well, we used a flattened wire ourselves.

Q. A flattened wire. But it comes up to heat very rapidly, does it not, because your circuit is constantly closed. There is no necessity of storing heat. That is right, is it not?

A. The action of a heating element is governed by a [fol. 190] number of factors. The rate of heating and the rate of dissipation of heat. It is all tied in with the design and the physical dimensions of the unit. You can vary units considerably over a range, reasonable range, by varying those conditions of heat generation and heat dissipation.

Q. But in Copeland the cigar remaining in contact with the resistance constantly during the lighting period, and there being no necessity for storing the heat, the natural way would be to make it heat up immediately, would it not?

A. No. We found in experimenting with this very type of lighter that if you get too hot a unit, one that flashes up too quickly, you burn away the wrapper of the cigar or cigarette, and defeat the purpose. It is better to have a slow unit which comes up slow. And that can be arranged.

Q. The mere bringing up of the resistance to incandescence does not turn the circuit off, does it? It does not open the circuit?

A. It would, provided there was a co-acting winding in series with it operating the thermostat.

Q. But in Copeland you have the resistance of incandescence in order to light the cigar, and then the cigar has to remain there a certain period in order to get lighted; that is correct, isn't it?

A. Lighting doesn't take place any more quickly here than it does when you use a different type of lighter which

you pull out and apply to the end of the cigarette in your mouth.

Q. But you have to hold the cigar—you have to let the cigar remain there in order to get it lighted after the resistance gets heated up, don't you?

A. It all takes place in about the same time as people are normally used to having lighters act.

[fol. 191] By the Court:

Q. Mr. Wolfson, I do think that on cross examination you ought to be more responsive to questions.

A. All right, sir.

Q. Mr. Huxley asked you a proper question.

A. Will you re-state the question?

By Mr. Huxley:

Q. In order to light the cigar in Copeland you hold the cigar in engagement with the resistance element, don't you?

A. You place it in engagement.

Q. You place it in engagement, and then when the resistance element comes up to incandescence you leave it there, as the patent says, for a given time, in order to get the cigar lighted, don't you?

A. There is a time element involved.

Q. You don't open the circuit immediately when the resistance element comes to incandescence, do you?

A. Not necessarily.

Q. You do not, do you? Copeland wouldn't work if you did? You have exactly as the patent says. It holds it there for a time element sufficient to light the cigar?

A. It is not instantaneous.

Q. It is not instantaneous. In other words, you don't open the circuit when you reach incandescence, you don't open the circuit until after you have kept incandescence for a material time; otherwise your cigar wouldn't light?

A. You have to hold it for a sufficient time to light a cigar.

Mr. Huxley: That is all.

By the Court:

Q. You said, Mr. Wolfson, that when the proper relation is established between the winding on the thermostat

[fol. 192] and the resistance, thereafter the operation will not be subject to external variation?

A. That is what I said.

Q. Now, I understood you to say, or understood the effect of your testimony to be, that in this relationship between the winding of the thermostat and the resistance there is included a certain amount of convection and direct heat conduction flowing from the heater to the thermostat?

A. A certain small amount, your Honor.

Q. Now, wouldn't that amount vary in direct proportion with the bulk of the cigar that is inserted? For instance, I notice that you have an outline of both a cigar and a cigarette in the insert. The cigar appears to allow no clearance at the bottom of the socket on the left and a small clearance only on the right, whereas with the cigarette there is quite a substantial clearance. Now, the more clearance you have won't the conduction operate to bring the heat out through the socket with the draft and thereby create a variable on the operation of the instrument? Do you see what I mean?

A. In referring to this type of apparatus, your Honor, I have not been guided entirely by a theoretical consideration of the apparatus. We have done considerable work with apparatus of this general type, and we find that in many cases it is easier to light a cigar than a cigarette with the apparatus entirely horizontal and no upward draft through it.

Q. I am going to take a recess now, and during the recess I am going to ask the reporter to read you my question and your answer. I am going to ask you if you think your answer is a fair one to my question.

A. I am sorry, your Honor.

Q. It was a long complicated question. I don't intend to be critical, and if you don't understand my question you can say so.

(There was a short recess.)

[fol. 193] S. L. WOLFSON, a witness called in behalf of the defendant, resumed the stand and testified further as follows:

By the Court:

Q. My question is not conclusive; your own counsel can supplement it on re-direct. Bear in mind that if you or

your counsel don't think it is an important question, all you have to do is so urge. I don't think your answer was responsive to the question.

A. I wanted to be informative, your Honor. The point I was trying to bring out is that since both the thermostatic—

The Court: I will withdraw the question and save time.

Mr. Allyn: I am sorry. I thought Mr. Wolfson could answer it. I haven't talked with him about it. I don't think he understood quite the pertinency of a direct question that requires a definite answer.

The Court: Let us make progress.

By Mr. Allyn:

Q. Mr. Wolfson, in a lighter of the Copeland type when does the cigar begin to get lighted?

A. Under all conditions tobacco will ignite before the element comes to a visible heat.

Q. Is that what you understood Mr. Huxley to mean by incandescence?

A. No, I understand incandescence to mean a red or white heat.

Q. Then, you mean that it will light before incandescence?

A. Certainly.

Q. Upon what do you base that answer?

A. Upon experience in using both the cord-type and the cordless type of lighters.

[fol. 194] Mr. Allyn: Have you any more questions?

Mr. Huxley: I have not.

Mr. Allyn: The next patent I wish to call to Mr. Wolfson's attention is his own patent 1,980,157.

The Court: What is this cited against?

Mr. Allyn: This is cited to show substantially the identical structure of the Cohen No. 2 patent with the exception of the addition of thermostatic means.

Mr. Huxley: That is against the Cohen second?

Mr. Allyn: It applies particularly to Cohen No. 2 patent.

Mr. Huxley: Is that for prior invention? I notice that the date the patent was issued is 1934.

Mr. Allyn: That is true. I overlooked that point, because we all know that this device was on the market in 1931. Mr. Cohen knows it and Mr. Johnson knows it.

Mr. Huxley: I want to be accommodating, but I can't accept those things.

Mr. Allyn: I will produce the prior proofs of the device.

Mr. Huxley: Is it pleaded?

Mr. Allyn: It does not have to be pleaded. It does not anticipate the terms of the claims. I haven't intended that.

The Court: Why don't you first, through the witness, put on the testimony of the prior use, and then won't the ground be cleared to refer to the patent as an illustration?

By Mr. Allyn:

Q. Mr. Wolfson, you are familiar with this patent No. 1,980,157?

A. I am.

Q. What do you know about the commercial situation with respect to that device?

A. As of when?

[fol. 195] Q. As of 1931.

A. We made a considerable number of those devices in 1931 and sold them to various car and accessory manufacturers and to the public in general through the jobbing trade.

Q. What was the trade number of that?

A. That was known as our No. 2610 lighter; the 26 with other various numerals for the different modifications of them.

Q. And is that one of the items included in the statistics which Mr. Huxley asked us to produce this morning?

A. I believe it is there referred to as the 2600 series.

Mr. Allyn: I wonder if the Clerk has that exhibit. It has been taken out by the Clerk, I am told, to have a photostat made. You didn't take any of the figures out of the chart?

Mr. Huxley: I don't remember them. No. They are in the record.

The Court: The precise number of the figures is not important, is it?

Mr. Allyn: No, but I wanted to make sure that we identified it, so that there would be no question.

Mr. Huxley: Have you a sample? We have no desire to raise any technicalities or anything like that.

Mr. Allyn: Ask your own client if you want to.

Mr. Huxley: No; ask your witness.

By Mr. Allyn:

Q. Please examine this sample that I show you.

A. That is an embodiment of the 2610 device, substantially as sold to the Ford Motor Company in the years mentioned.

By the Court:

Q. What years?

A. 1931, 1932, and up to 1934.

[fol. 196] By Mr. Huxley:

Q. May I ask a question? Are you sure that that represents the device that was sold back in 1931?

A. To the best of my recollection it does, substantially.

Q. Well, substantially. Can you point out any differences?

A. I don't recall any major differences. We might have changed slightly the contour of certain parts. This has a metal sleeve in the knob which, I believe, was not present in the very earliest ones. They operated exactly the same way.

By Mr. Allyn:

Q. I show you another sample plug and ask you if you can identify it.

A. That has the same type of device—that is the same type of device without the metal sleeve, which has been cut away to show the working parts.

Q. When was that device made and sold, or one exactly like it?

A. That is the so-called jobbing model which we sold to the general public when we first came out with that type of lighter, which was, as I have stated, in 1931.

Q. Does that differ in any respect from what was on the market and offered for sale and sold in 1931, 1932, and 1933?

A. The only modification that I see as I look at it more closely is that there is a rim around the heating element cup, which wasn't present on those models.

Q. How about the spring construction in the plug?

A. It is identical—off the same tools that made them all in those early days.

Q. What is this that I show you now?

A. That is a partially cut away socket for receiving that head, into which there has been placed in lieu of the stand-

ard contact a contact of thermostatic metal with latch ends.

Q. How does this plug alone that I have mentioned differ [fol. 197] from the plug shown in your patent 1,980,157, if at all?

A. The heating element is a modern one in which we have incorporated our standard commercial practice of welding. The heating element cup, as I said before, has a rim around it, which is not shown in the patent. I see no other material difference. It has been cut away for exhibition purposes.

Mr. Allyn: I will offer in evidence this plug with the cut-away portion, together with the socket which has just been referred to by the witness as a modified Wolfson device, the plug of which is claimed to have been on the market identically the same in 1931, 1932, and 1933.

By Mr. Allyn:

Q. Sold in what quantities to the Ford Company?

A. Thousands, surely. Tens of thousands probably. I haven't the figures.

Mr. Huxley: May I ask a question?

By Mr. Huxley:

Q. Do you know what time in 1931 that was put on the market?

A. No, I couldn't state the month from memory.

The Court: Before we go into that let me see if I can shorten matters by asking Mr. Huxley if it would be inconsistent with his position to concede that this exhibit has no patentable distinction from the second Cohen patent except for the thermostatic feature? That, I understand, is all it is being offered for, and perhaps you can concede that. I said patentable distinction.

[fol. 198] Mr. Huxley: I am afraid I could not, your Honor. I would be perfectly willing to stipulate to have the structure explained; but we must consider in every claim the co-operation with various elements, and so on. I am afraid that I could not stipulate that. We do concede, however, that this device was on the market in 1931. We are perfectly willing to stipulate to the facts.

Mr. Allyn: I want to be sure. Will you stipulate that that was on the market or one substantially identical with it, in 1931, 1932, and 1933?

Mr. Huxley: Yes, substantially the same.

(Stipulated Cuno plug offered in evidence and marked Defendant's Exhibit "O".)

Mr. Allyn: This particular one does not have the cut-away plug head, the one as to which it was stipulated.

Now I should like to ask if you would also stipulate, Mr. Huxley, that this cut-away plug head is substantially the same as the one that was in public use and on sale in 1931 and 1932.

Mr. Huxley: Except for the heating element and its holder, that is correct.

Mr. Allyn: I did not intend to mislead my friend. That has a slight rim on the edge of the igniter element, which was not in the 1931 or 1932 construction.

Mr. Huxley: Oh, yes.

Mr. Allyn: I did not intend to mislead you.

Mr. Huxley: Isn't this other one sufficient for your purpose?

Mr. Allyn: No, because I want the Court to see this one in connection with the other part of the exhibit that Mr. Wolfson mentioned.

[fol. 199] Mr. Huxley: The part that surrounds the resistance element has been modified, has it not?

Mr. Allyn: Yes.

Mr. Huxley: From 1931?

Mr. Allyn: Yes. I told you that just now.

Mr. Huxley: I'm afraid we can't stipulate it, then.

Mr. Allyn: All right.

Mr. Byrne: It appears to us that all that remains as the same is the outer case, so I am sorry but we can't stipulate.

Mr. Allyn: Very well.

As to defendant's Exhibit O, I understand it is stipulated to have been in public use and on sale in 1931 and 1932 extensively.

Mr. Huxley: That is correct, with the exception of the metal sleeve in the socket.

Mr. Allyn: I understand that that was in use also.

By Mr. Huxley:

Q. There wasn't a metal sleeve in the plug, was there?

A. On some of them there was not. I don't know just when the change was made; early, however.

By Mr. Allyn:

Q. Does the metal sleeve alter the operation?

A. None whatsoever.

Q. This has no thermostatic device in it, is that correct (handing an object to the witness)?

A. That is correct.

Q. Now, in that device there is a contact member in the bottom of the socket with four arms, is that correct?

A. Two pairs of arms. The two pairs differ slightly.

[fol. 200] Q. Would you say that they were coaxial with the socket?

A. I would.

By Mr. Huxley:

Q. In this Wolfson device after the plug element shown as 8-14 is pushed in, the circuit is closed, isn't it?

A. It is.

Q. And then the device is held there while the resistance element 8 is heated up to the proper temperature; that is correct, isn't it?

A. Yes.

Q. There is nothing to hold the device in the closed-circuit position, is there?

A. No.

Q. You have to hold it by your hand?

A. Yes.

Q. There is no thermostat in this, is there?

A. None.

By Mr. Allyn:

Q. What would it be necessary to do to convert that to a thermostatic device?

Mr. Huxley: I object to that on the ground of mere argument, as to what you would have to do to change one thing over to another.

The Court: I don't think it is very helpful.

Mr. Allyn: If your Honor thinks that is not helpful, may I withdraw the question and ask the witness to state this:

By Mr. Allyn:

Q. In what respect does exhibit M differ from the Cohen No. 2 patent in the essential elements?

A. Perhaps that is best answered by showing the correspondence between them.

Q. Very well, explain it that way.

A. Spring 17 in the patent, the operating spring—
[fol. 201] Q. In the Wolfson patent?

A. In the Wolfson patent. It may be considered as spring 37 in the Cohen device. The sleeve 38 with its flange 39 in the Cohen device may be considered as part 4 and 4' in the Wolfson device, referring now to Figure 3 in the Wolfson device. The parts of the plug in the Wolfson device marked in the exploded view, Figure 3 as 5, 5', and so forth, correspond to the tubular parts—the unit holding parts of the Cohen device—having various numbers; the heating element of the Wolfson device staying into those parts as the heating unit of the Cohen device stays into the corresponding parts there. The spring in the Wolfson device reacts against the 4' flange on cup 4 as it does on the flange in part 38 in the Cohen device, on 1, and on knob in the Cohen device and on the knob in the Wolfson device on the other end. The difference now is that in the Wolfson device the 4-4' is not a close fit in the tubular holding device as it is in the Cohen device. Otherwise they operate in very much the same way. The pressure on the knob compresses the spring, and the unit, the whole plug body advances until contact is made. They differ in the fact, as stated before; that Wolfson has no thermostat to hold the unit in closed position, whereas Cohen has.

Q. In other words, the contact members 10 in Wolfson have been replaced by the thermostatic latch member 22 in the Cohen patent?

A. That is what I intended to convey.

By Mr. Huxley:

Q. Mr. Wolfson, in the Cohen device the thermostatic latch members 22 have the function, first, of closing the circuit, second, of holding the plug in its inner position, and third, of releasing that plug under the influence of the heat of the resistance coil? In other words, opening up the springs to allow the spring 37 to become effective; that is true, is it not?

A. Yes.

[fol. 202] Q. You don't find anything in the Wolfson patent save the arms 10 which form a contact; that is true, isn't it?

A. That is true.

Mr. Huxley: That is all.

By Mr. Allyn:

Q. There is one other distinction with respect to the grounding of the plug in the socket. Won't you point that out?

A. Yes, there is a difference there that I have not thought of. In the Cohen device the grounding takes place through this yellow colored flange 45 and the finger lance out of the shell, part No. 50. In the Wolfson device the grounding takes place through the cup-shaped member 4 butting against the socket tube end.

Q. So that the Wolfson device, is a single-break device and the Cohen device is a double-break device, is that correct?

A. If the parts are accurately proportioned, the Cohen would be a double-break device and the Wolfson a single-break device.

Mr. Allyn: Have you any more questions?

Mr. Huxley: No.

Mr. Allyn: If your Honor please, I want to explain my little joker, defendant's Exhibit A, which my friend was astonished at. It was only offered for identification. I would now like to offer it in evidence. It is a sample of a Casco device which I ran across and found that the plug was somewhat loose, so I deliberately bent the three little tongues slightly, to see what would happen if the plug were loose, and that is what was shown in the experiments (indicating). That was the sole purpose of it.

[fol. 203] Mr. Huxley: I object to it as immaterial. I don't see that it has any bearing.

Mr. Allyn: In my opinion it has a very substantial bearing, because it is one of the vital things in the socket which is in no way disclosed in the Cohen patent. That is the purpose of it.

The Court: There is no basis in the evidence for it.

Mr. Allyn: May I have it marked?

The Court: Mark it for identification.

Mr. Allyn: It was marked for identification.

The Court: I don't see any basis in the evidence for it. The only identification was, as I recall it, the plaintiff's witnesses disputing the sample, and now I understand you to concede that the sample is distorted, and there the matter rests. How can I admit it in evidence over objection?

Mr. Allyn: It is to show what happens when there are insufficient friction devices in the lighter.

The Court: There is no evidence as to how the insufficiency occurred. There is evidence that it remained operative for over twenty thousand operations. Are you offering it to show what happens to it after twenty thousand operations?

Mr. Allyn: I offered it to show what happens when the device is not provided with these friction fingers, and I contend that the patents are fatally defective in that they do not point out any such requirements in these devices. That is the purpose of it. There is no disclosure in the patents of that element of the commercial device which the plaintiff has found necessary to employ in its commercial structure.

Mr. Huxley: I don't see that that bears on it at all. Of course if you shoved those things in it will jump out, but [fol. 204] any mechanic knows that you want the proper friction fit.

The Court: It seems to me again that it is a question of argument.

Mr. Allyn: That is sufficient, the admission that my friend has just made.

Are there any more questions of Mr. Wolfson?

Mr. Huxley: Are we finished with the patents?

Mr. Allyn: I have comments on them, and there is the matter of argument.

Mr. Huxley: I just want to have it clear before they finally go in. There are some that seem to have a later date, and I think we should know of all those introduced why they are introduced and against what patents, whether in anticipation or to show the state of the art.

The Court: Now is the time. The book was admitted subject to motion. If you want now to move to strike I should call on Colonel Allyn to specify why each one of them should not be stricken.

Mr. Allyn: I intended to explain the ones which have not been mentioned, but I was through with this witness, that was all.

The Court: Have you any other questions of this witness?

Mr. Huxley: I have a few general questions.

The Court: Very well.

By Mr. Huxley:

Q. In regard to the bimetallic member 54 of the Mead patent, as shown, for example, in Figure 16, I think you testified that if a high temperature bimetallic thermostatic wire were used there, it would not be satisfactory, in your judgment. Did you?

A. I did.

Q. There is also perfectly available low-temperature [fol. 205] thermostatic elements, is there not?

A. Presumably there is now.

Q. Don't you know that that has been true for many, many years?

A. I know that there have been various types of thermostatic metals on the market for perhaps a generation.

Q. And the different types are used, that is, the temperature requirements, according to the particular needs that one has; that is true, isn't it?

A. It is.

Q. I think you testified that in connection with the Mead construction, as shown in sheet 2, if the plug were moved from engagement with the contact 53, that is, if the pin 75 were removed from engagement with the contact 53 and contacted the casing, there would be a short circuit. Is that correct?

A. I did.

Q. As a matter of fact, is the casing included in the circuit as shown in Mead at all?

A. Yes, if you look at Figure 21. If you will turn that around you will see that you have two connections. This one apparently is connected to the back plate (indicating).

Q. In Mead there are two separate wires shown throughout, are there not? That is, the one connection comes from a wire and then in the present practice it is often customary to ground on the frame of the machine, but in Mead's he shows two separate wires, doesn't he?

A. He does, and that is the reason for my statement that there is no indication of insulation between that cover and this base plate, which is grounded through one of the wires.

Q. Suppose it were connected in the circuit and there were danger of short-circuiting. In your judgment wouldn't it occur to anybody to put in some insulation?

A. I am of the opinion that there is no insulation on the sample that I see that such short-circuiting action would take place.

Q. That is your opinion?

A. That is my opinion.

Mr. Huxley: That is all.

[fol. 206] Mr. Allyn: As I understand it, we can offer these others without having the witness refer to them.

The Court: They have been admitted. I am now asking Mr. Huxley a question.

Mr. Huxley: I would move to strike all this that has not been specifically discussed unless it is clearly stated for what purpose they are introduced and pertinent to what patent—whether as anticipation or to show the state of the art. If a definite statement is made as to why they are offered, I can then go ahead.

The Court: Very well, we will have to pick them out one by one.

Mr. Allyn: There are only a few more.

Mr. Huxley: All right.

Mr. Allyn: I refer to Andrews 1,025,852.

Mr. Huxley: Why is that offered?

Mr. Allyn: This shows an electric heater. It happens to be in the form of a flat iron, but it is claimed more broadly than that.

Mr. Huxley: Pardon me. I don't like to interrupt, but is it introduced to show the state of the art?

Mr. Allyn: To show the state of the art.

Mr. Huxley: Against what patent?

Mr. Allyn: Against Mead's.

Mr. Huxley: Against Mead's?

Mr. Allyn: That is right. Does your Honor wish any further explanations at this moment in connection with these?

The Court: I think you had better state what there is on the face of the patent that you think I should observe.

Mr. Allyn: I call attention to the fact that this is an automatic cut-out for electric heater. The particular form of heater is a so-called flat iron or sad iron in which there is [fol. 207] a thermostat 15 in the bottom in Figure 1, which is heated by the same coil which heats the iron. Figure 4 shows the electrical resistance circuit which produces the heat which makes the iron effective, and the thermostat is a bimetal strip 15 which actuates a switch to open the circuit when the device gets to an excessive temperature. It

automatically opens the circuit. The circuit can be closed again by pushing down on the knob 28.

The Court: What does that show that Langos did not show? Was it Langos?

Mr. Allyn: No, sir.

The Court: Denhard?

Mr. Allyn: It shows simply another form of the Denhard type of structure. The switch is much more simple than Denhard, but the thermostatic action is the same. It does not happen to have a strip of insulation between the iron and the thermostat in Andrews, and my brother called attention this morning to the fact that there was a mica layer 6, in Denhard between the thermostatic layer 61, and the heater.

The Court: Is it fair to say that its only contribution over Denhard is the elimination of the mica?

Mr. Allyn: I don't regard that as being any contribution.

The Court: Where is the contribution of Andrews to our present situation?

Mr. Allyn: It simply shows another automatic thermostat for turning off the heat on an electric heater, that is all.

The Court: In other words, it lends emphasis to Denhard?

Mr. Allyn: That is correct, nothing else.

[fol. 208] The Court: Do you object to it?

Mr. Huxley: No.

The Court: Then, let it stay in.

Mr. Allyn: Denhard has already been mentioned. Cavanagh 1,294,045 shows the state of the art—

Mr. Huxley: The state of the art as against what patent, if you don't mind?

Mr. Allyn: The state of the art against Mead, and also as showing a removable plug which, in a certain sense, corresponds with the plug of the thermostatic lighters. Here there is a spring switch member 7 in Figure 1, and the plug 8 is pressed down to close the circuit. The plug 8 is the model device. It is pressed down to close the circuit of the spring 7. The thermostat 9 interlocks with the plug which holds it in the closed-circuit position.

The Court: What figure are you on?

Mr. Allyn: Figures 1 and 2. The thermostatic arm 9 has a little projection 19 on the tip, which engages the shoulder 18 on the plug, to hold the plug down when the cir-

cuit is closed. When the thermostat heats, it releases the plug and the spring 7 snaps the plug up and opens the circuit. The plug is detachable with the bushing 14, being normally held in place by the U-shaped spring member 20, which is shown in Figure 3. There is a spring-latch member there which holds the plug in the box in either the open or closed-circuit position. That is all.

Mr. Huxley: There is no objection to show the state of the art.

The Court: To clear it up in my mind, I should like to ask a question. Stahl 1,372,207: Does Cavanagh show anything over and above Stahl for present purposes except the fact that in Stahl a plunger and removable plug is substituted.

[fol. 209] Mr. Allyn: That is correct, but there is one other slight difference, namely, that in Stahl the thermostat metal, per se, is a part of the latch, whereas in the Cavanagh patent the thermostatic metal has a non-thermostatic tip 19. I don't think that is of any consequence, but my brother has argued and the attorney has also, in the file wrapper quite extensively on the subject of having the thermostatic metal act as the latch.

The Court: Does Cavanagh specify that the protuberance 19 is non-thermostatic?

Mr. Allyn: No, he does not, but he does not say that it is, and from a general knowledge of mechanics and drafting I would not expect that he would make that tip of thermostatic metal.

The Court: All right.

Mr. Allyn: I don't think it makes any difference. Now. Newsom 1,318,168—

Mr. Huxley: Will you tell us what this is for?

Mr. Allyn: The state of the art with respect to Mead. This shows a so-called automatic controlled electric coffee cooker. Here the coffee pot A—

The Court: What figure?

Mr. Allyn: In Figure 1.

The Court: Yes.

Mr. Allyn (Continuing): —rests on a grid-like member which contains the heating element No. 3, and above the top of this grid is a diaphragm 7 right in the center, which has a thermostatic member and is so arranged with a latch mechanism in the bottom that when the temperature of the

coffee pot reaches the desired extent the latch will be released and turn off the coil.

The Court: Where is the latch?

Mr. Allyn: The latch is in the bottom of the left-hand side. [fol. 210] The Court: What number?

Mr. Allyn: A number of elements. I think there is a circuit diagram on the bottom of sheet 2, which shows the contacts 40 and 41 of a switch.

The Court: Where is the bimetal?

Mr. Allyn: There is no bimetal in this case. This is a different kind of thermostat. This is what they call an expansion diaphragm type in member 7.

The Court: What element is it that does the expanding?

Mr. Allyn: The member 7 in a chamber which may contain air or may contain a liquid. It is a common form of thermostat. It causes the disc to expand and move the central post 9.

Mr. Allyn: A somewhat different form is shown in Figure 4 and still slightly different in Figure 3; but that is a well-known type of an expandable thermostat.

The Court: Looking at Figure 1, 7 is a wire coil in an air chamber; is that right?

Mr. Allyn: No, sir. 7 is a diaphragm. It is called a thermostat.

Mr. Huxley: It cups more or less, does it not?

Mr. Allyn: Yes. There are two disks fastened together at the rim with a space between the disks. And when the thing gets hot the contents cause the diaphragm to expand, swell, so that the upper member and the lower member tend to separate in the center.

The Court: Well, that separation forces the plunger 9 down?

Mr. Allyn: That is right. Then it operates on some latch mechanism to open the circuit. The character of it is unimportant.

[fol. 211] Mr. Huxley: It is possibly most clearly shown in Figure 3, isn't it, where those two members, 13 and 52, are hooked together?

Mr. Allyn: Yes. In Figure 3 there is a different kind of latch, the same kind of device with the letter B on the outside and the thermostat inside. When the thermostat expands, plunger 9 moves down and trips the latch 50 away from 52. And the spring 54 throws the rod 52 to the right, viewed in Figure 3, and opens the circuit in the switch 55.

Mr. Huxley: That is it.

Mr. Allyn: The coffee pot in Figure 1 is separate from the rest of the mechanism. In the form shown in Figure 3, the heater is in the bottom of the coffee pot. It apparently is not readily detachable.

Mr. Byrne: You see it in Figure 1, Mr. Allyn?

Mr. Allyn: No, I think not.

Mr. Huxley: This, Mr. Allyn, is one of many devices where you close the circuit and then as a safety measure there is some sort of heat-controlled element that opens it.

Mr. Allyn: Not necessarily safety member. Open it for many purposes. It is one of them.

Mr. Huxley: Patents issued for each one?

Mr. Allyn: For the specific forms shown, it quite frequently happens. Adams 1,373,583—

The Court: Prior art?

Mr. Allyn: —was offered solely to supplement Morris in showing a commercial form of the Morris device.

Mr. Huxley: State of art?

Mr. Allyn: It shows merely the state of the art.

Mr. Huxley: Pertinent to Mead.

Mr. Allyn: It is pertinent in the same sense that Morris [fol. 212] is, but it does not add anything to Morris, and if you object I have no objection to withdrawing it.

Mr. Huxley: The same as Morris?

Mr. Allyn: It explains the difference between the Morris patent and the Morris commercial structure.

Zecchini 1,437,701 is on the state of the art with respect to the Cohen patents, and also showing a plug type cigar lighter at a date preceding that of Mead.

The Court: For present purposes, does it add anything to the Wolfson exhibit you just brought in?

Mr. Allyn: It shows the type where the mechanism is in the plug in Zecchini, whereas the Wolfson commercial form had an outer sleeve as well as the interior plug portion. This shows a more compact form than the one with the external knob, with which really the inventions are interchangeable.

Mr. Huxley: Do I understand this to show the state of the art pertinent to the two Cohen patents?

Mr. Allyn: That is right. And as showing a well type and plug type lighter preceding Mead because Wolfson did not precede Mead.

Mr. Huxley: No objection for that purpose.

Mr. Allyn: Hurxthal, 1,540,628. This is offered simply to show the state of the art generally. Structurally it has no resemblance to any of the patents in suit. It was referred to in the Chicago case, and my brother used it as an argument for the support of his contention. And I offered it to show a device in which the heat of the surface to be treated acts upon the member, the thermostatic member, to [fol. 213] open the circuit. Here the wire 17 in Figure 1 is arranged adjacent to the surface of the toast which is being heated by the heater. And when that wire has been heated to a pre-determined degree, which is that at which the toast is supposed to be most delectable, that wire 17, through a series of levers, trips the member 6 and opens so as to throw out the toast, and in page 1, the first column, lines 17, 18 and 19, the patentee says, "It is also possible to break the electric circuit leading to the toaster."

Mr. Huxley: No objection for the purpose stated, for the purpose of showing the general state of the art.

Mr. Allyn: Metzger 1,622,334 is introduced solely that the Court may know what was cited against Mead. I cannot see that it has any bearing on the case other than that as explanatory, so that the Court may know what is cited.

Mr. Huxley: That has a plug that rotated to closed circuit, didn't it?

Mr. Allyn: There is some sort of rotative motion, but it is a very indistinct disclosure. But I don't know. I never saw anything like it.

Mr. Huxley: The state of the art pertinent to Mead; is that right?

Mr. Allyn: I do not think it is pertinent to Mead.

Mr. Huxley: All right. State of the art generally.

Mr. Allyn: I do not think the examiner cited the patented art as pertinent to Mead.

The Court: This is Metzger that is referred to in the Mead file wrapper?

Mr. Huxley: Yes, sir.

Mr. Allyn: It was cited against Claim 7, original Claim 7 of Mead. It shows how remote the Patent Office can sometimes be and how they can overlook the pertinent things.

Mr. Johns tells me that has not any rotary motion. I do not know whether it has or not. I never have been able to understand how the thing worked. I think we may as well

withdraw that other Langos patent 1,719,228, because I do not think it adds anything to 1,697,686.

Mr. Byrne: What number did you give, Mr. Allyn, please, that you are withdrawing?

Mr. Allyn: 1,719,228.

Mr. Huxley: You have Mead here as one of the patents. Do you rely on that as an anticipation, or to show the state of the art with reference to Cohen?

Mr. Allyn: We rely upon Mead as showing the state of the art preceding the Cohen patents.

Mr. Huxley: State of art, Cohen.

Mr. Allyn: Showing there is no invention in any broad respect in view of the disclosures, the descriptive disclosure of Mead.

The Court: But doesn't all the evidence you have given me which disparages Mead, serve to praise Cohen?

Mr. Allyn: No, I think not. I think not.

The Court: All right.

Mr. Allyn: That, I presume, is what my brother will argue. The structures are so obvious—the Cohen structures are so obvious, in view of the rest of the art. As I pointed out already, the first Cohen patent is no good. It never was any good.

The Court: Let us clear up these references. I did not mean to start anything.

Mr. Allyn: It never could be any good.

The Court: Let us take our recess here till 2:10.

(At 1:10 P. M., a recess was taken until 2:10 P. M.)

[fol. 215] November 3, 1939, Afternoon Session

Mr. Allyn: I think this morning we had gotten down as far as the Wolfson patent 1,732,784 which was cited by the examiner against the first Cohen patent. I submit it for the information of the Court, and as showing the state of the art.

Mr. Huxley: With reference to the Cohen patents?

Mr. Allyn: It was cited against the application for the first Cohen patent.

Mr. Huxley: First Cohen.

Mr. Allyn: Yes. It shows a switch wholly within the plug member, as distinguished from being part between the plug

and the socket. That first Cohen patent stresses that, and I believe is limited. We contend that that first Cohen patent is limited to a construction in which a switch action lies wholly within the socket, and in Wolfson's patent which we have just mentioned there is a switch which is not automatic, but except that it is spring-pressed released, and that switch is wholly within the plug.

The Cohen patent says that the switch must be wholly within one of the parts of the lighter.

Mahan 1,757,255 was cited by the Patent Office against the second Cohen patent. Your Honor will doubtless remember that as one of the references you had to consider in that case we had against Meehl. This shows the state of the art solely, and is for the information of the Court as to what the Patent Office thought might be pertinent.

Mr. Huxley: This is against the second Cohen?

Mr. Allyn: The second Cohen patent was cited against that.

The Court: I do not quite see why you cite these references [fol. 216] from patent wrappers. Is it your claim that some amendment occurred in the Cohen application which involved estoppel?

Mr. Allyn: That is correct. The arguments in the file wrapper show that the claims were allowed with limited scope; where they previously had contended for broad claims, they obtained only narrow claims.

In this Mahan patent the plug carries an interior sliding member which has the igniter coil 9 on the inner end. When you push on the plug 16 you compress the spring 15 and bring the center member 12 against the stationary contact 27 in the socket. That closes the circuit at that point. The other side of the circuit is closed through the pins 30, and which engage the metal shell 6, which in turn engages the wall of the socket.

That shows a plug in which a part of the plug has the inner and outer position which is somewhat similar to the action in the two Cohen patents. The plug moves in and out as it is closed, with the igniter, which is not the case in the Cuno device.

Copeland 1,838,363: It is to show the knowledge, prior knowledge by Copeland, as of March 9, 1927, of the idea of controlling the igniter circuit of a cigarette lighter by means of a thermostat. The circuit is shown in Figure 10. There the switch is similar to the switch shown in the later Cope-

land patent 1,844,206. There is a push button 21 and a plunger 18 adapted to be pushed in against a buckling spring, which in turn presses against a thermostatic member and closes the circuit. When the circuit has been closed for a certain time, the thermostat warps the thermostat arm and opens the circuit.

[fol. 217] Mr. Huxley: Do you think that adds any to the other Copeland patent, Mr. Allyn?

Mr. Allyn: It shows the use of an automatic thermostatic release in a cigarette lighter as of March 9, which is a month and eleven days prior to the filing of the other Copeland patent.

Mr. Huxley: Yes, but aside from that, that difference of a month, does it add anything?

Mr. Allyn: Well, it precedes.

Mr. Huxley: Yes, I know it is a month earlier.

Mr. Allyn: It precedes, rather than adding.

The Court: It precedes what?

Mr. Allyn: It precedes the other Copeland patent.

Mr. Huxley: It is about a month earlier.

Mr. Allyn: It is an earlier step in a cigar or cigarette lighter, an earlier step than in that other Copeland 1,844,206.

Mr. Huxley: This is March 9, 1927, and the other 1,844,206 is filed April 18, 1927.

Mr. Allyn: It shows the thermostat in the same way in series with the igniter coil 27.

Cohen 1,944,925 was cited by the examiner against the first Cohen patent in suit, and in fact is referred to in this first Cohen patent on page 2, column 1, line 9, where Cohen says, "For convenience and clarity in the following description the present invention is shown as applied to what may be termed sleeve-type cigar lighters for use in automobiles similar to the lighter disclosed in my patent 1,944,925, issued January 30, 1934."

Mr. Huxley: That is state of the art; is that right?

Mr. Allyn: That shows the state of the art, particularly with respect to the first patent as set forth in the application, and also bearing upon the construction of the second [fol. 218] Cohen patent in suit. So far as this 1,944,925 is concerned, it will be seen that there is a switch in the base of the socket having two movable contacts which are brought together when the plug is inserted. The two contacts are separated automatically by the use of a spring when the pressure on the plug is released. The first Cohen patent

in suit merely adds a thermostatic latch in that base member. The action is otherwise substantially the same.

The Court: It has a thermostat?

Mr. Allyn: No, sir, it does not have a thermostat. I say the first Cohen patent in suit merely adds a thermostatic latch in the base member which holds the contacts together until the device is heated and then releases. Cohen's 1,944,925 does not show the thermostat.

Mr. Huxley: This, I think, was merely mentioned for clarity of description. Of course this patent, Cohen patent, was issued after the first Cohen patent, or rather the original application on which it was based, had been filed in 1932. And this patent 1,944,925 was issued in 1934. So the two applications are co-pending.

Mr. Allyn: They are overlapping.

Mr. Huxley: Overlapping. This is not a reference.

Mr. Allyn: Well, it shows knowledge of Cohen himself of this structure as early as 1929.

Mr. Huxley: Oh, yes, but that, of course, is the same man.

Mr. Allyn: For purpose of information I have introduced the Ashton patent, 2,060,783, which by mistake on the part of the examiner was cited against one of the Cohen patents.

The Court: Which one of Ashton are you talking about? [fol. 219] Mr. Allyn: Ashton 2,060,783. It is cited against the first Cohen patent. But of course the filing date was altogether too late to apply to the Cohen device. Cohen's application, your Honor will see, was pending for some six years and a half in the Patent Office.

Mr. Huxley: This is offered for illustrative purposes; is that correct?

Mr. Allyn: And in order that the Court may know what it was that the file wrapper was talking about.

Mr. Huxley: Yes.

Mr. Allyn: If you object, I make no point of it.

Mr. Huxley: No objection, besides that, if it is distinctly understood that it is too late to be a reference.

Mr. Allyn: The same situation in effect applies to the other Ashton patent, 2,084,966 which issued while Cohen's first patent was pending. And Cohen copied a claim out of Ashton which, however, was ultimately stricken out of the Cohen application as not being pertinent to the Cohen structure.

Mr. Huxley: That is introduced for informative purposes but not to show the state of the art.

Mr. Allyn: That is correct. I think that it is not necessary to introduce this Wolfson 2,093,116, as it was not cited, and discloses structure of the other Wolfson patent 1,980,157. This later Wolfson claims what we call the contact in the bottom of the socket. And it is earlier than any of the patents in suit except Mead. And the plaintiff has admitted the existence of the structure in 1931, 2 and 3.

Mr. Huxley: That does not add anything to the other.

Mr. Allyn: I do not think it adds to the other, and I, therefore—

[fol. 220] Mr. Huxley: You withdraw that?

Mr. Allyn: I withdraw that from the record. I had included copies of the two Cohen patents in suit which I do not need to put in as my exhibits. They were merely there for the convenience of the Court. I think they should not, therefore, be in the file of my exhibits, the Cohen 2,117,232 and 2,140,311.

Mr. Huxley: You do, however, as I understand it, rely upon Cohen 2,117,703.

Mr. Allyn: That is correct.

Mr. Huxley: For the defense of double patenting.

Mr. Allyn: That is correct.

Mr. Huxley: So that is in for double patenting.

Mr. Allyn: That is right. 2,117,703 should remain as evidence of priority over this first Cohen patent in suit, based upon which the first Cohen patent is invalid for double patenting.

Mr. Huxley: It is the defense of double patenting that you are urging.

Mr. Allyn: That is correct.

Mr. Allyn: It was a prior patent. If it had been a later patent it would not invalidate the claims.

Mr. Huxley: I see.

Mr. Allyn: I do not believe this Johnson patent 2,139,374 need be in this record. That was the patent that was held invalid, I believe, by Judge Holly, but is not involved in this suit.

Mr. Huxley: That is correct.

Mr. Allyn: I therefore withdraw that from my book of patents.

I think at this time, in view of the record thus far made. I withdraw the Cohen patent 2,137,195.

Clerk Carroll: Should I make a note of that being withdrawn?

[fol. 221] Mr. Allyn: That patent is withdrawn from this book of exhibits.

The Smith British Patent 285,200 is offered to show the practically concurrent work on a thermostatic cut-out or automatic cut-out for cigar lighters, concurrent with the alleged work of Mead.

Mr. Huxley: I will have to object to that.

Mr. Allyn: Just a moment, please.

Mr. Huxley: Pardon me.

Mr. Allyn: This has been mentioned several times, and I do not know. I do not believe that under the record that is in the case now, that that is necessary.

The Court: Will you withdraw British Smith?

Mr. Allyn: I withdraw that, and also the British patent to Rupps, 298,073.

Colonel Johns tells me this. This Rupps patent was cited against Cohen's patent, and therefore should remain in as showing the state of the art.

Mr. Huxley: State of art for Cohen?

Mr. Allyn: Against Cohen.

Mr. Huxley: Cohen, both patents.

Mr. Allyn: It should equally apply to both patents.

Mr. Huxley: Cohen patents.

Now the Rupps. I mean the Smith.

Mr. Allyn: Smith is out.

Mr. Huxley: Yes, that is prior to Cohen, but not prior to Mead.

The Court: It is out.

Mr. Huxley: Out.

Mr. Allyn: I apparently made a mistake about that Wolfson patent.

The Court: Which Wolfson?

Mr. Allyn: Wolfson 1,980,157.

[fol. 222] Colonel Johns tells me it was not cited against that second Cohen patent. Had Wolfson 1,980,157 been cited, I do not believe the Patent Office would have allowed the patent.

The Court: Which Wolfson?

Mr. Allyn: 1,980,157, was not cited against Cohen. If I said that, it is a mistake.

The Court: I thought you cited that as illustrating your structure identical with the second Cohen except for the thermal.

Mr. Allyn: That is right, sir, but Colonel Johns said I said it was cited by the examiner. If I did say that, it was a mistake. It was not cited by the examiner.

The Court: I do not think so.

Mr. Allyn: If it had been cited, the examiner would not have allowed the case. I mean if he had noticed it.

The Court: That Wolfson just came in as an illustration of a prior-use device.

Mr. Allyn: Well, the patent issued later than Mead, but prior to Cohen 1980, issued prior to Cohen but it was not prior to Mead. That is right. It was co-pending. That is the trouble. It was co-pending with the Cohen patents, although it was filed in '31. We proved and stipulated the public use of the device prior to the filing of the Cohen applications.

That is all.

Mr. Huxley: I would like to offer in evidence as Exhibit 29A a copy of the Smith British patent 285,200, which is later than Mead but is earlier than the Cohen patents, for the purpose of showing how a thermostat could be used in a cigar lighter, but even at a later date it indicates the mis-[fol. 223] directed efforts which failed, as we say and submit, to meet the Mead combination. It is merely illustrative.* I would now like to offer in evidence a stipulation which is dated September 16, 1939, in regard to certain testimony that was taken in the case at Chicago against the Sinko Tool & Manufacturing Company. That stipulation provides that the testimony there taken of Mead, Dunsmore, George W. Johnson, and Sidney Thomas Jessop, may be used in this case with the same force and effect as though directly taken here, and that the attached copies of exhibits offered in connection with this testimony, may also be used. So that I offer the testimony of these four men and also the exhibits accompanying their testimony. For the sake of simplicity, I will make a record of the exhibit. I offer as Plaintiff's Exhibit 30 for Identification, Plaintiff's Exhibit 29 of the Sinko case, also for identification, as Exhibit 30.

(Plaintiff's Exhibit 29A, Smith British Patent 285,200.)

(Exhibit 30 for Identification: Plaintiff's Exhibit 29 of the Sinko case.)

Mr. Huxley: As Plaintiff's Exhibit 31, Plaintiff's Exhibit 30 of the Sinko case.

(Plaintiff's Exhibit 31: Plaintiff's Exhibit 30 of the Sinko case.)

Mr. Huxley: As Plaintiff's Exhibit 32, Plaintiff's Exhibit 31 of the Sinko case.

(Plaintiff's Exhibit 32: Plaintiff's Exhibit 31 of the Sinko case.)

Mr. Huxley: As Plaintiff's Exhibit 33, Plaintiff's Exhibit 32 of the Sinko case.

(Plaintiff's Exhibit 33: Plaintiff's Exhibit 32 of the Sinko case.)

[fol. 224] Mr. Huxley: As Plaintiff's Exhibit 34, Plaintiff's Exhibit 34 of the Sinko case.

(Plaintiff's Exhibit 34: Plaintiff's Exhibit 34 of the Sinko case.)

Mr. Huxley: As Plaintiff's Exhibit 35, Plaintiff's Exhibit 35 of the Sinko case.

(Plaintiff's Exhibit 35: Plaintiff's Exhibit 35 of the Sinko case.)

Mr. Huxley: And as Plaintiff's Exhibit 36, Plaintiff's Exhibit 36 of the Sinko case.

(Plaintiff's Exhibit 36: Plaintiff's Exhibit 36 of the Sinko case.)

The Court: You said something about offering those for identification.

Mr. Huxley: That was one that was offered for identification but was not in evidence in the other case, and is also merely offered for identification, in this case in the same way, merely to make the testimony intelligible; that is all. It is not in evidence. It is simply marked for identification.

Mr. Allyn: Might I ask the purpose of the offering of this exhibit or this stipulation?

Mr. Huxley: Certainly. The purpose of this is to remove any question in regard to the alleged earlier date of knowledge and invention of Copeland, which is established either in March according to the earlier Copeland patent, or April of 1927 according to the second Copeland patent. It is our position that this testimony, supplemented by other testimony which we shall now offer, carries back the date of in-

vention of Mead prior to any Copeland date that is established. So the Copeland patents become quite immaterial, that is, the date of invention is earlier as established by [fol. 225] this evidence, we submit, than Copeland. That is the purpose, on rebuttal.

Mr. Allyn: If that is the purpose, it is proper.

Mr. Huxley: And to also show that there is a certain reference here to the development of the Mead lighters, and it is offered to show that too, that is, the commercial status of the actual Mead lighter.

Mr. Allyn: Or not, as the case may be.

Mr. Huxley: The testimony is there and speaks for itself. In connection with the testimony in Chicago, there were certain physical exhibits which were also mentioned by the witnesses. One was Plaintiff's Exhibit 7 of the Sinko case. And that is an exhibit now in that case, and which is presently coming up to the Court of Appeals, and it is identical in all essential respects with Exhibit 12 in this case. The spring is on the outside here, and is on the outside there. I think the two are substantially the same.

Mr. Allyn: I think that is substantially like Exhibit 12.

Mr. Byrne: We agreed to that yesterday, Mr. Allyn.

Mr. Huxley: Yes, I think we did.

Mr. Allyn: One of them might have a good lighter on it and the other might not.

Mr. Huxley: I notice one of these plugs here does not have the resistance element in place, but that is just a detail.

There is another one, which was Plaintiff's Exhibit 33 in the Sinko case, which was evidently a hand-made model, mounted on an angular stand. The coil there, the bimetallic thermostatic coil, is on the inside of the socket. So that I [fol. 226] think in all essentials, if we could agree that that is a somewhat cruder model of the construction shown in Plaintiff's Exhibit 13 in the present case——

Mr. Allyn: May I see the inside of it?

Mr. Huxley: I thought you saw it yesterday.

Mr. Allyn: Did I see it yesterday?

Mr. Byrne: They were all seen yesterday and before.

Mr. Huxley: These are all substantially the same. Of course, we will have these if the example is questioned, or anything like that, but we cannot, I am afraid, leave these in this case because they are in the other case. Is that agreeable?

Mr. Allyn: Yes.

Mr. Huxley: Exhibit 37 of the Sinko case is one of these cigar lighters mounted on a piece of wood, and the construction of this, I think, has also been examined, and as far as the cigar lighter proper is concerned, the little bimetallic coil is on the outside of the socket, similar to Plaintiff's Exhibit 12 in the present case.

Mr. Byrne: 12 or 13? Which is it?

Mr. Huxley: It is simliar to 12. It is on the outside. Could you check up?

Mr. Allyn: Well, you take it apart. I would rather have you take it apart.

Mr. Byrne: He has a screw driver over there.

Mr. Huxley: I am perfectly agreeable to have anything added to the record that counsel would like as to any difference in checking of the similarities. But it would just save time.

I call Mr. Head.

[fol. 227] ALLAN J. HEAD, called as a witness on behalf of the plaintiff in rebuttal, being first duly sworn by Clerk Carroll, testified as follows:

By Clerk Carroll:

Q. Your name and town?

Direct examination. --

By Mr. Huxley:

Q. What is your full name?

A. Allan J. Head.

Q. Where do you live, Mr. Head?

A. Detroit, Michigan.

Q. What is your business?

A. I am a die and tool maker.

Q. Do you know Mr. Herbert E. Mead of Detroit, Michigan?

A. I do.

Q. Will you tell us very briefly what your connection with Mr. Mead has been and whether you were both connected at any time with the same company?

A. Well, I met him while I was with the Stewart Manufacturing Company and also Ramsteen Company and then

later I bought a part interest in the Central Stamping Company which Mr. Mead was connected with at that time.

Q. He was connected with the Central Stamping Company?

A. Yes.

Q. You bought a third interest?

A. Yes.

Q. When was that?

A. Why, that was about 1924 or 5.

Q. About 1924 or 5. And around that time, say, oh, prior to 1927, did you devote any portion of your time to the work of the Central Stamping Company?

A. Yes, evenings, Saturdays and Sundays and holidays and any time I could get.

Q. In that connection did you come in contact with Mr. Mead?

A. Yes, worked right with him. Mr. Mead stayed and [fol. 228] worked with me during evenings and Saturdays.

Q. Is that the Mr. Mead? Do you know whether he took out a patent on a cigar lighter?

A. Yes, I know he did.

Q. No. 1,736,544?

A. I wouldn't know the number.

Q. No, but I am showing you a copy of that. Is that the Mr. Mead that you know?

A. Yes.

Q. Prior to the beginning of 1927 what products did this Central Stamping Company make in general?

Mr. Allyn: If your Honor please, may we have the dates eliminated and find out whether the witness has a memory of his own?

Mr. Huxley: Yes.

By Mr. Huxley:

Q. You testified, did you not, that you were connected with the Central Stamping Company?

A. Yes.

Q. What date was it when you went with them?

A. 1924 and 25.

Q. And 24?

A. Around in there.

Q. What was the business of that?

A. We manufactured accessories for automobiles.

Q. What, for instance?

A. Horn buttons, fender braces, steering column brace.

Q. What did Mr. Mead do in connection with that company? What was his connection?

A. Mr. Mead ran the factory.

Q. He ran the factory. These other companies you were working for, the Stewart Company and Ramsteen, where were they located?

A. They were located in the same building with the Central Stamping Company.

Q. During what period would you say that you devoted [fol. 229] your Saturday afternoons and evenings to work in connection with the Central Stamping Company with Mr. Mead? During what period was that, roughly?

A. Well, I would say it was when I went in there as a partner in 1924, I think along late in the fall of 1924.

Q. And then on to what time?

A. Well, until about 1928.

Q. What was the financial condition of the Central Stamping Company?

A. Very, very bad.

Q. You put some money in it?

A. Yes.

Q. Was there any sale made of that company at any time?

A. Yes.

Q. When?

A. Maybe—in the latter part of 1926.

Q. Who was the sale made to?

A. S. T. Jessop & Company.

Q. Prior to the time of that sale did you ever see Mr. Jessop down in Detroit in connection with the work of the Central Stamping Company?

A. Yes.

Q. These various products that were made by the Central Stamping Company, state whether or not any of them were sold to Mr. Jessop?

A. Yes.

Q. What was he, a selling agent?

A. Yes. Well, he had a warehouse in Chicago too. He stocked some of the goods.

Q. Now, when this sale was made to Mr. Jessop, did he supply some money to carry on the work of the company?

A. Oh, yes, he bought the company. He furnished the money.

Q. And then he ran it?

A. Yes.

Q. So then the company, you might say, dissolved at the end of 1926, and then whom did you work for?

A. I was still working for Mr. Ramsteen.

Q. You were still working for Mr. Ramsteen?

A. Yes. That is during the daytime.

Q. That is during the daytime. Prior to this time of the [fol. 230] sale to the Jessop Company had you ever observed Mr. Mead doing anything in connection with any work on cigar lighters?

A. Yes.

Q. Tell us what you observed and when and what it was. Just tell us in your own words.

A. Well, I believe it was in the spring of 1926 that Mr. Mead conceived the idea of making an automatic cigar lighter, I understood with a manual action.

Mr. Allyn: If your Honor please, simply may he state what he knows, not what Mr. Mead conceived?

By Mr. Huxley:

Q. That is correct. What did Mr. Mead do?

A. He started work on this automatic cigar lighter.

The Court: When was this?

By Mr. Huxley:

Q. When was this?

A. In the spring of 1926.

Q. Was that prior to the date or after the date of the sale to the Jessop Company?

A. That was before.

Q. That was before?

A. Yes.

Q. What did Mr. Mead do in connection with that? What did you see yourself?

A. We built some models. He built the model, several of them, different kinds. He experimented with the thermostatic metals.

Q. What did he build? Give us a description of that if you can.

A. Well, we had a base. I imagine it was about two and one-half inches in diameter, probably one-sixteenth of an inch thick.

Q. Of metal?

A. Of steel, probably cold rolled steel. And then cover-
[fol. 231] ing this was a fiber disk of diameter of the base.
And then assembled with that was a bracket. And on this
bracket was a sleeve, or we used it as a socket. There was
a contact point on one end.

Q. Round, was it?

A. Round and long just like a sleeve, but it had a bottom
to it.

Q. It had a bottom to it?

A. Yes.

Q. How was that attached to this base?

A. I believe with a screw. It was so it locked. With a
screw we locked it in position so that it would not tighten
up on the screw, in the sleeve to rotate.

Q. The screw itself?

A. Yes.

Q. Was this sleeve you are talking about movable or
stationary?

A. No, it was movable. It would rotate.

Q. Now, was there anything else carried by that base?

A. Yes. In fact both the contact points.

Q. That is, will you describe a little more what that was?

A. The ground wire was at the end of the horizontal part
of the bracket. And the vertical part of the bracket held
the spring, a flat piece of steel, perhaps about, oh, I would
say three-sixteenths or a quarter of an inch wide.

Q. Yes.

A. And it was formed in a oval shape. One end had a
"V" form.

Q. "V"?

A. Yes. And of course this was insulated from the
bracket. And still the vertical part of the bracket held this
spring. And then of course there were some slots, two slots,
I think, in the socket. And we had what we called a knob.
It was a plug really. One end held a heating element.

Q. What was that heating element? What sort of a thing
was that?

A. Well, it was a flat coil.

Q. A flat coil?

A. Yes. Made of a heating element material. I really
do not know what the composition was.

Q. Yes.

A. But it was a steel flange. And then we had a fiber [fol. 232] knob. And inside of this plug held the contact point, and——

Q. What sort of a thing was that contact point?

A. If I remember correctly about one-eighth of an inch square. It was brass and probably projected through the sleeve of a plug one-eighth of an inch.

Q. That stuck out sideways, did it, or what?

A. Yes. Then we had another little rivet or piece of brass that fitted into the opposite side of the slot.

Q. The slot of the socket?

A. Yes.

Q. Tell us, did you see this thing operate?

A. Yes.

Q. Did you operate it yourself?

A. Yes.

Q. How did it work? What did you do and what happened?

A. Well, you see we had a thermostatic coil in the bottom.

Q. Did you have a spring? You had what?

A. We had a thermostatic coil spring in the bottom, a flat coil spring.

Q. In the bottom of the socket?

A. Yes. Of course this was fastened. One end was fastened to, I think it was a screw, to the bottom of the socket. It held the socket to the bracket or to a base. And the other side was hooked to the socket itself.

Q. Yes. When you wanted to operate it what did you do?

A. Just put the plug in. There were two sized slots in the socket. One was quite a bit larger for the contact point. And the other slot in the socket was just a trifle larger than the pin. So we used to slide it in. And when it hit bottom, turn it to the right.

Q. Then what happened?

A. It came in contact with this oval spring that was on the vertical part.

Q. That V-shaped thing?

A. Yes—on the bracket.

Q. Then what did you do?

A. Well, it was usually left there 'til it clicked off,—in the reverse direction.

[fol. 233] Q. That is, you turned it over?

A. Turned it into this 'til you could feel it stop.

Q. Then what did you do, take your hand off?

A. Take your hand away.

Q. Take your hand away. Then what happened?

A. When the heating element got to a certain heat the thermostatic metal would release the contact and it would go back to its regular position and then you took it out.

Q. Then you took it out?

A. And used it.

Q. Did you work at a bench with Mr. Mead or what? Where did you do this work?

A. Yes, on a bench.

Q. Did you make some of the parts?

A. Yes, I made some of the parts.

Q. What was your particular job? Did you turn them up on a lathe or what did you do?

A. Sometimes I made a little temporary die. I remember those little temporary dies in my experimental days.

Q. Do you remember Mr. Jessop or anyone else coming down to this plant at Detroit before this sale was made to the Jessop Company?

A. They were there several times.

Q. Did you have this thing that you have described?

A. Yes.

Q. Or not, at that time?

A. Yes, we did.

Q. Are you positive of that?

A. Absolutely.

Q. How did it work at that time? For instance, you take the handle. What was the character of that or what was it made out of, the knob on the device that you have spoken of?

A. Oh, well, probably one of our experimental knobs. Made out of a piece of fiber. Fiber rod.

Q. Fiber rod?

A. We turned it up in a lathe.

Q. Did this thing work the way you have described it?

A. Yes, it worked.

[fol. 234] Q. Did it work perfectly satisfactorily or did you have some trouble?

Mr. Allyn: Please—

A. Oh, we had plenty of trouble.

By Mr. Huxley:

Q. Plenty of trouble. What was the trouble?

A. Well, the thermostatic metal would come soft, or whatever it was, and it would not operate every time. For a while it would be all right.

Q. Yes.

A. But I imagine the heat being so close to the heating element, affected the thermostatic metal.

Q. I see.

A. In time. And it would not click off the way it should.

Q. Now, you remember this sale that was made to the Jessop Company. Now project your mind to a period after that sale and tell us what more was done by you and Mr. Mead in connection with this Mead lighter.

A. One thing, we had to change our thermostatic spring.

Q. In what way?

A. We took it from the inside, the bottom of the socket and put it on the outside.

Q. And put it on the outside. How did that work?

A. It seemed to work fairly good. We had very little trouble after that.

Q. Did you, for instance, change your thermostatic metal, the supply, or anything like that?

A. Yes. I think our first metal was purchased from the Chase Valve Company that are in Detroit. And then from a representative of the Wilson Company somewhere in the east. I do not recall just where that was.

Q. You do not remember?

A. We used to have sample thermostatic metal and I think we used that. In fact I know we used that.

[fol. 235] Q. That appeared to be better?

A. It seemed to answer our purpose better.

Q. More reliable?

A. Yes.

Q. Have you looked around and been able to find any of those original models that were made at the time of the sale to the Jessop Company?

A. Yes, I have one.

Q. You say you have one?

A. Yes, I have one.

Q. I mean made prior to the time of the sale to the Jessop Company. You had one, did you?

A. I did not have one of those, I do not think. No. But I have seen them.

Q. You have seen them?

A. Yes.

Q. Where was the spring on the inside or the outside of the socket?

A. You are talking about prior to the time he purchased the place?

Q. I am talking of prior to the time when Jessop bought the company. I am showing Exhibit 33 from the Sinko case. And will you examine, not the stand on which it is, but the main portion of this, and tell us, after examining it, how that compares, or whether you could in any way identify it in fact as having been made before or after the time of the sale to the Jessop Company. You can take the plug out if you like. Is that a hand-made or machine-made?

A. That is one of our early models, a very early model.

Q. Where is the spring located in the socket on that particular one?

A. This is not one of our——

Q. That is not the plug; is that right?

A. Yes, that was a later plug.

Q. That was a later plug, but how about the rest of it?

A. Well, as far as I can see, it is one of our early models, very early models. I think I can safely say that that will be the same thing, if it is not one—of our models—before Mr. Jessop bought the company.

Q. Before he bought the company?

A. Yes.

[fol. 236] Q. One of your hand-made models?

A. You see your coil thermostatic spring is——

Q. On the inside?

A. On the bottom of the socket.

Q. Besides that have you any models that you could find that you are sure were made prior to the time of the sale to the Jessop Company? Have you any of them? Anything besides this one I have just shown you, that you are familiar with, as something which was actually made prior to that time?

A. Well, I do not believe I have one right now.

Q. No. Have you made a search for these things?

A. Yes, I did, at home.

Q. Yes.

A. Yes, I found one home that I have home, but I do not think it was one of the very new——

Q. You found one that was given to Mr. Johnson some time ago, did you not?

A. Yes.

Q. That was one with a nickel-plated cover, and so on?

A. Yes.

Q. After the sale to the Jessop Company was there any time at which you went to work exclusively for Jessop?

A. Yes.

Q. About when was that?

A. Well, it was—it would be about the last of May, 1928.

Q. Last of May, 1928?

A. Yes.

Q. And up to that time what had you been doing, working Sundays and evenings and so on?

A. Worked eight hours for Ramsteen and then spent the rest of the evenings and Saturdays or Sundays or holidays out at the S. T. Jessop Company.

Q. Was Mead there during all this time?

A. Yes, and most of the time he worked right along with us.

Q. He worked right along with you. What did you do in the way of developing this cigar lighter? Tell us what took place. Did you hire any die makers, for instance?

A. Yes. When it came to—when we were satisfied that [fol. 237] the cigar lighter would work, we hired die makers to come there, and of course I worked along with them to make the permanent dies.

Q. When did you hire those fellows? Do you remember?

A. Why, I imagine we started——

Q. I think you had——

A. In the fall of 1928.

Q. In the fall of 1928?

A. Yes.

Q. You had a book, did you not, where you checked that up?

A. Yes, that was in October, wasn't it?

Q. October, 1928.

A. Somewhere along in there.

Q. When you hired the die makers, did you hire them for that purpose, for making dies for this automatic cigar lighter? Is that what you hired them for?

A. Yes.

Q. And they put in all their time on that, did they?

A. Yes.

Q. They did?

A. Oh, I would not say all their time, because we had other work, and sometimes they might help out on some other little job of die or fixture or tool that they wanted made. But they spent the principal part of their time on the tooling for the cigar lighter.

Q. Tell us what was that about actually getting this thing on the market. Would you tell us about shipments you might have made of these devices?

A. Why, the S. T. Jessop handled that, their sales. Or Johnson, their sales manager, he handled that part of it. We made shipments to different jobbers. And Montgomery Ward.

Q. You shipped to them direct?

A. Yes.

Q. Upon orders that you got from Mr. Jessop; is that correct?

A. Yes.

Q. Did you, in these shipments that you made, for instance to Montgomery Ward, the commercial shipments, did you encounter any difficulties? Did you have any complaints? Did any come back?

A. Yes. Yes, there were. I believe of the first few shipments we did have some trouble. They returned them.

[fol. 238] Q. What was the trouble?

A. Well, they just did not operate just right. We did not have our thermostatic spring just——

Q. Just right?

A. Just right. As we should have had it, but that was corrected.

Q. That was corrected?

A. Yes. And we sold one again. We sold them.

Q. You continued to sell Montgomery Ward?

A. Yes.

Q. Had repeat orders?

A. Had repeat orders all over the United States.

Q. When did you say you had what might be called the kinks out of it, so that you were shipping a product that was satisfactory to you? Along about the time you hired these?

A. I would say the latter part of 1928.

Q. Latter part of 1928?

A. Probably the middle. It is pretty hard to tell exactly.

Q. Around in 1928?

A. Yes.

Q. Did you have many returns from that time on?

A. Occasionally we would have returns. Sometimes the heating elements did not work just right. We would have to replace the heating elements.

Q. Replace the heating elements. That was a little coil, the little igniter coil.

A. Yes. The end of the knob of the socket. I mean the plug.

Q. But were any large quantities returned or anything of that kind?

A. Oh, no, not from any other place. We would have them returned not often, but now and then.

Q. How long did Mr. Mead continue to be associated with you in the Jessop Company approximately?

A. Well, I believe it was the same year of 1928. I would say September or October. Somewhere along in there. He left.

Q. He left?

A. Yes.

Q. You were in daily contact with him; is that right?

A. Yes.

[fol. 239] Q. Why did he leave?

A. Well, it was over a controversy over a Ford contract that we had.

Q. Ford contract for what?

A. Making shock absorber items.

Q. What happened and what was the controversy?

A. Well, Mead really got the contract.

Q. From Ford?

A. Yes. And we had gone along making them right along, and Ford wanted to change this and that, and Mr. Mead was willing to change it, and Mr. Jessop was not, to make these changes. In a business of our size, to buy two big coin presses was out of the question, and they wanted their bolts coin-pressed, instead of lathed. We had turned them in a short-cut lathe.

Q. Did his leaving have anything to do with these cigar lighters, his leaving?

A. No. We went right on to build them, excepting the Ford work. We did that.

Q. You mean these shock absorbers?

A. Yes.

Q. After Mead went, you went right on making these cigar lighters?

A. Yes, and the rest of the products, yes.

Q. I am showing you this card. Do you recognize it?

A. Yes, I recognize that, sure.

Q. What is it?

A. It is one of the packing cartons for the Jesco Automatch, one of our first ones.

Q. One of the first ones?

A. Yes.

Q. Did you use that one before Mead left?

A. Yes.

Q. Yes, I see. That was what you put the cigar lighters into for shipment?

A. Yes.

Mr. Huxley: I offer that in evidence as Plaintiff's Exhibit 37.

(Plaintiff's Exhibit 37: Carton for Jesco Automatch Lighter.)

Mr. Allyn: May I ask the purpose of that?

Mr. Huxley: Yes, to show the general commercial development and success.

[fol. 240] Mr. Allyn: As of what date?

Mr. Huxley: Before Mr. Mead left.

Mr. Allyn: I am sorry; I could not hear what the witness said.

Mr. Huxley: He testified, Mr. Allyn, that that was the type of carton that they used before Mr. Mead left the company.

By Mr. Huxley:

Q. Now, after Mr. Mead left the company did you adopt any other style of carton?

A. Yes, we changed quite a bit. We adopted that—I don't know what you call it—checker-trim effect on this carton and we made a darker one.

Q. I show you another carton. Do you recognize it? Tell us what you know about it.

A. That is a later one we used.

Q. Is that the kind of carton you used in your shipment to Montgomery Ward?

A. I would say it was. We did not make any difference in our cartons in the shipments to another customer. What we shipped to one I think we shipped to the rest of them—

the same thing. I don't remember whether we made any differentials.

Mr. Huxley: This carton has already been identified through the testimony of other witnesses, and a photostat of it is in the Sinko case, identified as Exhibit 35, so I will not again offer it, inasmuch as it has already been offered, except that here is the original. We have a photostat in.

I might say to your Honor as to all this other testimony that we have documentary proof of the date when the actual bill of sale took place from the Central Stamping Company to the Jessop Company. All that is established by documentary evidence.

[fol. 241] By Mr. Huxley:

Q. Are you connected with the Casco Company in any way, the manufacturer in this suit, or the plaintiff?

A. No.

Q. Have you any interest in this suit one way or the other?

A. No, I have not.

Q. Now, Mr. Head, I am handing you two photostats marked "Plaintiff's Exhibit 28 for identification," and I am showing you the second page. Do you find on that any representation of the Jessop cigar lighter, this type you have been telling us about?

A. Yes, I would say that one there (indicating).

Q. You are now pointing——

A. In the middle column.

Q. It is the third column from the right-hand side on the bottom, is it not?

A. Yes.

Q. That you identify as the cigar lighter that you were making and shipping, correct?

A. Yes.

Mr. Huxley: This is offered in evidence as Plaintiff's Exhibit 28. I have the original catalog, but I take it that there is no question as to this.

Mr. Allyn: No objection.

(Plaintiff's Exhibit 28 for Identification received in evidence and marked "Plaintiff's Exhibit 28.")

By Mr. Huxley:

Q. Now, this last spring or about in May, 1939, what was your condition? Were you well or were you ill?

A. In May?

Q. Yes.

A. I have been sick. I was sick since February.

Q. You were sick at that time?

A. Yes.

Q. There was some discussion with you at that time about coming to Chicago to testify or not?

A. At the time of the trial I had not been out of the house.

[fol. 242] Mr. Huxley: I have here, Mr. Allyn, the complete invoices of the shipments during 1928 of the so-called Jesco automatic lighters, and I have a list of the shipments that gives all the details. I have no witness to identify this, but if you would be willing to accept it as genuine, I can give you the list, if you care to have me, so that you can know just exactly what the shipments were. The shipments of the cigar lighters are all marked with those slips, and I have here a complete list of the information there, showing the number, the person sold to, and the price at which they were sold. I did not bring a witness because I don't think it is vitally important, in view of the testimony already given, but if you would care to stipulate the exact facts, I am perfectly willing to do so. That list, I might say, was prepared in my own office. I don't think it is particularly material. I thought that if you would like the exact information it would be right there.

Mr. Allyn: It is quite a good deal of information to absorb in a moment.

Mr. Huxley: Think it over for an hour or so.

Mr. Allyn: I don't wish to take any more time. Are they in inverse order?

Mr. Huxley: Yes. The earlier dates are on the bottom. The first one is No. 2579, a shipment to L. F. Pierson of one cigar lighter, and so forth. You will find all the shipments to Montgomery Ward, and all the others are on there.

By Mr. Huxley:

Q. Mr. Head, I am showing you Plaintiff's Exhibit 12 in this case. Will you look at it and tell us whether that [fol. 243] represents shipments that you made on the commercial scale in 1928 or around there?

A. Yes, I would say so.

Q. That is your commercial product?

A. That is our stamp on there, and the case is about the same, as far as I can see.

Q. Did you ever use one of those on your own car?

A. Yes, sir.

Q. How long did you use it?

A. I would say a year.

Q. About a year?

A. A little better than a year.

Q. When? Around 1928?

A. I would say we started in 1927, in the fall.

Q. That was when you put it on the car?

A. In 1927, yes.

Q. And you used it about how long?

A. I would say about a year.

Q. Were you using it right along?

A. Whenever I needed a light, I did.

Q. Did it work satisfactorily or not?

A. It worked satisfactory as far as I was concerned.

Q. Is Plaintiff's Exhibit 12 a product that you normally made commercially?

A. I would say so.

By the Court:

Q. Made at what time?

A. 1928 or 1929.

Mr. Huxley: 1928 that one.

By the Court:

Q. What was the date of the earliest model that you ever saw Mr. Mead make?

A. Well, that would be pretty hard for me to tell. I would say it would be around June or July of 1926.

By Mr. Huxley:

Q. May I ask this question, Mr. Head? Are you positive that that first model which you saw him operate was before [fol. 244] the sale to the Jessop Company?

A. Oh, yes, before I ever knew very much about the Jessop Company. I don't think I even met Mr. Jessop at that time.

The Court: What do the documents show?

Mr. Huxley: The documents show that he sold, or rather, that the sale was December, 1926.

That is all.

Cross-examination.

By Mr. Allyn:

Q. I think you said that you worked for Mr. Rhanstine.

A. Yes.

Q. Didn't he make a cordless lighter?

A. He did.

Q. Can you describe it?

A. Yes, it was a bakelite affair, and the heating element was in a plug. You pressed it into this socket and, of course, you could see when it was red-hot and you could remove it and use it. The form, I would say, of the lighter was in a kind of horseshoe-shape, and the knob that you lighted you simply put into this horseshoe-shape affair.

Q. Do you know whether that had anything to do with Mr. Mead's work?

A. Really, the sample that he had in the beginning was really the beginning—give us the idea. Mr. Rhanstine wasn't in the automobile accessory line at that time; he was manufacturing radio parts.

Q. He gave you the idea of a cigar lighter?

A. This was laying around in the shop. I don't remember whether, it was in the shop, but around his place.

Q. You stated that the original lighter that was made along about in 1926 or 1927 or 1928 had the spiral spring in the bottom of the socket?

A. No, it wasn't a spiral spring; it was a flat coil.

Q. Well, mathematically that is a spiral, isn't it?

A. No, it is not. I would not say a spiral; I would say a spiral was not like that.

[fol. 245] Q. That happens to be a helix.

A. All right, have it that way. I don't know, but I would say it was not.

Q. There was a coil in the bottom of the socket?

A. Yes, a flat coil, thermostatic metal.

Q. You afterwards changed that and put the coil on the outside?

A. The outside of the socket, yes.

Q. Do you remember when you did that? Was that after he filed his application?

A. I imagine that would be along in 1927, say, May or April, I mean May or June; somewhere around in there. Maybe a little bit earlier; maybe later. I don't remember for sure.

Q. Wasn't it after he filed his application for a patent?

A. I couldn't tell you that.

Mr. Huxley: I don't think Mr. Head knows the date of that.

Mr. Allyn: Just a moment; I am testing his recollection.

The Witness: I couldn't tell you that. I had very little to do with the patent part of the cigar lighter.

By Mr. Allyn:

Q. Then, it might have been later in 1927 that that spiral spring was put around the outside of the socket?

A. You mean the thermostatic metal?

Q. Yes.

A. It wouldn't have been any later than 1927. We built some of our permanent dies in the latter part of 1927, and I am sure we had it more nearly right. I won't say that either. That is not what I mean. I mean we were satisfied with the lighter before we started our permanent dies and tooling.

Q. And that, you said, was in the fall of 1928?

A. No, the fall of 1927.

[fol. 246] Q. You just said that it was the fall of 1928 to Mr. Huxley.

Mr. Huxley: I think you are mis-quoting the witness.

A. No, I never said that. I might have. I might have made the mistake. I have a record to show it was along in October.

By Mr. Huxley:

Q. When did you hire the die-makers?

A. In 1927—the latter part of 1927.

Q. Do you know when the first sale of a commercial lighter was made?

A. No, I couldn't tell you. I would say it was around, oh, 1927, in the latter part, before we started the permanent dies. It might have been a little bit later.

Q. It might have been in January of 1928?

A. Yes, it could be. I think you will find that there were some sales made even before they had those invoices. We sold them. We made them with our temporary dies. We just put them out to see how the public would take to them.

Q. Well, what was the matter with those that came back from Montgomery Ward?

A. Oh, some of those heating elements burned out, and I think there was some trouble with the thermostatic metal.

Q. It was quite a trick to get the proper thermostatic metal, wasn't it?

A. I agree with you.

Q. Your business was not a large business at that time, I take it?

A. Oh, no, we were very small.

Q. So an order of 150 lighters was quite an order?

A. That was a wonderful order, I will tell you that.

Q. This exhibit 33 in the case of The Automatic De-[fol. 247] vices Corporation against the Sinko Tool and Manufacturing Company was shown to you by Mr. Huxley, was it not?

A. You mean a few minutes ago?

Q. Yes.

A. Oh, yes, sure.

Q. Did you say when that was made?

A. That is one of our very early models. I think that was made probably in the latter part of 1926. That is my guess.

Q. Who mounted it?

A. Mead did. I didn't mount it.

Q. That is the way it was mounted when you saw it at an early date?

A. Oh, I don't think so. We probably had models that we were working on a board. When we made these it was really late in 1926 or the early part of 1927. We modeled some out of boards about that square (indicating) and this is one of our early models. I couldn't tell you exactly.

Q. It may have been put together later by Mead on that mounting?

A. I don't quite understand.

Q. Was it mounted when you saw it in the early days as it is now?

A. Oh, no, this lighter is mounted on an escutcheon plate on this, whatever you would call it—an angle piece of cold-rolled steel.

Q. You mean that that escutcheon plate wasn't on there at that time?

A. Yes, it could be. That escutcheon plate was very likely made when we made the stand it sets in. May I see that again? I know that we had a few of them made by hand. We spun these cases by hand. We had a difficult time getting the flange straight. This is one of the very early models. You can see that the flange is cut and you couldn't get it straight. We made it over a wooden mandrel and lathe.

Q. Look at that knob and that plug and say whether you really think that it was made prior to your commercial production in 1927 or 1928.

A. No, our first knobs were made—we had just an arrow, [fol. 248] as I remember. I think the arrow went practically the whole diameter of the knob, and in this arrow we put a white ink in it.

Q. That is not one of the early knobs?

A. No, this is not. This is a later one—one of the late knobs—very late.

Q. You notice the name of the Jesco Company on that plate?

A. Yes.

Q. It must have been put on afterward?

A. Oh, that could be, yes, because we experimented. That was one job to get that—

Q. Decalcomania?

A. Yes.

Q. After you got into commercial production in 1927 or 1928?

A. Yes.

Mr. Huxley: I have some photographs here which I would like to offer in evidence in this case, photographs of Plaintiff's Exhibit 33 in the Sinko case, as Plaintiff's Exhibit 38.

The Court: May I ask the purpose of it? The witness has admitted that the knob was not made then and that the base plate was not made then.

Mr. Huxley: That is right, but it is to show, as far as we can, what the witness has been talking about, that is all.

Mr. Allyn: I have no objection to that. It may be useful.

By the Court:

Q. In which company was it that you had a third interest?

A. The Central Stamping Company.

Q. And Mead was a part owner in that company?

A. Yes.

Q. And he used the company's time and materials to develop this lighter?

A. No, sir, that light was developed in the Central Stamping Company.

[fol. 249] Q. I didn't understand you. What company did you have an interest in?

A. The Central Stamping Company, and Mead also had an interest, but he was working there full time, putting his full time in with the Central Stamping Company.

Q. While he was working there on full time he developed this lighter?

A. Yes.

Q. Didn't you feel——

A. It was our company.

Q. Didn't you feel that the company had an interest in the lighter?

A. The Central Stamping Company?

Q. Yes.

A. Yes.

Q. Did you ever suggest to Mead that he ought to have it patented?

A. I don't think I did. I don't remember ever doing that.

Q. Do you remember anything being said about patenting it?

A. I think that patent talk was after the S. T. Jessop Company had bought the Central Stamping Company.

Q. Did Mead ever give the Central Stamping Company any papers to show that they owned the invention?

A. I don't know of any.

Q. The Central Stamping Company was a partnership, was it not?

A. Until I bought in there, and then they made it a corporation.

Q. What other owners were there in the Central Stamping Company?

A. Mr. Moyers, Glenn Moyers.

Q. Did he ever invent an electric switch?

A. Not that I know of.

Q. How do you explain the fact that you say this model was first made and the invention developed in 1926, and yet nothing appears to have been done about patenting the invention until after that company had sold out to Jessop, a year later?

A. Well, I don't know; I couldn't explain that. We had no money to get a patent. It costs quite a bit of money [fol. 250] and we were putting our time—I wasn't getting paid for my time outright. I would have if it had been a success. I was gambling my time with theirs. I couldn't give you any real satisfactory answer outside of that as to why we didn't talk of having it patented or why we didn't have it patented in the beginning. I really don't know.

Mr. Huxley: May I explain what it was, as shown by this other testimony? The company was sold to Jessop. Jessop came down there to consider it, as shown by the other evidence. He considered the cigar lighter, bought the company out at the end of December, 1926. They went ahead with the development then after the Central Stamping Company had been bought out by Jessop. The patent was then applied for at Jessop's request and was assigned to either Jessop or the Jessop Company—I have forgotten which—and the whole chain of title is given here. But it was Jessop who bought the Central Stamping Company and who was the immediate cause of having the patent applied for. He was the man who had the money.

The Court: It is apparent on the record. I was inquiring why for over a year this invention has not been patented.

Mr. Allyn: The testimony elicited in the Sinko case shows——

The Court: I will read it when I come to it.

We will take our afternoon recess here.

(There was a short recess.)

[fol. 251] ALLAN J. HEAD, called as a witness in behalf of the plaintiff, in rebuttal, resumed the stand and testified further as follows:

Cross-examination (Continued).

By Mr. Allyn:

Q. Mr. Head, you said that you had had considerable trouble with the thermostatic metal and later got a type that suited you better?

A. Yes.

Q. From Wilson, I think you said.

A. I think it was from Wilson. Mr. Herman was the representative. I remember he was the man who called on us.

Q. That was the material you used in the spring on the outside of the socket?

A. Yes, I believe it was, because we didn't continue purchasing the Chase Valve Company material. We got most of our purchases from this Wilson Company.

Q. Now, you said that you had an oval spring?

A. Contact, yes.

Q. Contact?

A. Yes.

Q. What was that made out of?

A. I think that was a cold-rolled steel.

Q. It wasn't thermostatic metal?

A. You mean in the ones we sold commercially?

Q. Yes.

A. I doubt it. I think the thermostatic metal we did try did not work satisfactory to us and we did not continue. I am very sure that our later models were all hard rolled cold steel.

Q. In the latch?

A. Yes, in the latch, or the contact.

Q. The contact metal?

A. Yes, it is the same thing.

Q. That is what you refer to as your production model?

A. Yes.

Q. Which was in the latter part of 1927?

A. Yes.

Q. Do you remember what kind of thermostatic metal you used in the coil spring?

A. You mean the temperature high or low?

[fol. 252] Q. Yes.

A. No, I do not. I did not know at the time which metal was the high or the low-temperature. No, I couldn't say. I don't know.

Q. At that time you didn't know which kind to use, did you?

A. No.

Q. Now, can you read the drawing?

A. I think so.

Q. Look at this picture of the Mead patent, Exhibit 11. I call your attention to this form of device shown in Figure 21. Do you see that coil spring 105?

A. I see it from here.

Q. Did you make the coil spring like that? Out of thermostatic metal?

A. I really don't know anything about that spring. I am sorry, but I really don't recall it. We tried flat springs and we may have tried those coil spiral springs. I really couldn't tell you about that.

Q. You don't remember seeing one like this 105 in this Figure 21?

A. I couldn't say that I had.

Q. Do you see these two members marked 54¹ and 53, one in this drawing shown in orange (color) and the other blue? Do you remember any such thing as that in this early lighter?

A. You mean this (indicating)? This spring going around there, an oval spring? We then changed it. We had it this way and then we had it all in one and changed it. We put our contact—it was inserted with a piece of fiber in there. I mean it was insulated with a piece of fiber in there. Where is the base? Is that the base (indicating)?

A. Yes, from that bracket part.

Q. Well, in looking at this figure 21, the member marked No. 53—

A. 21.

Q. This is Figure 21 (indicating).

A. All right.

Q. Member 53?

A. Yes.

Q. It is shown in blue on this chart, is that right?

A. Yes.

Q. It is shown in blue color?

A. Blue or green; I can't see from here.

[fol. 253] Q. Is that what you call the latch (indicating)?

A. Yes, the contact.

Q. The contact?

A. Yes.

Q. And that, you say, was made of ordinary steel or spring steel?

A. Not spring steel. I think it was cold rolled high carbon—cold-rolled.

Q. But not bimetal?

A. Not in the later models, no. We did try that in some of our experimental work. We tried bimetal up there.

Q. It did not work so well?

A. No.

Q. No. 54¹ on this Figure, you say, at one time was made integral with 53?

A. Yes.

Q. And afterwards made separate?

A. I believe afterward it was made in one piece, wasn't it? I wouldn't be positive.

Q. I am asking you.

A. As I remember—I haven't seen the model for some time. We had a contact that came through here. This fiber in here—we had little prongs, I remember, that came out on the side and clamped onto this fiber and the fiber on this connection 54¹.

Q. 54¹?

A. What is this connection (indicating)?

Q. That is 53.

A. I don't see it here where that would be. Where would be your positive action? This is it probably, isn't it?

Q. I am asking you.

A. Well, it was fastened to this latch. That made the contact with the inside of this plug here or this contact point with the heating element (indicating).

Q. Now, sheet one of this Mead patent, exhibit 9, shows a different kind of cigar lighter, doesn't it?

Mr. Huxley: You mean a different construction from sheet 2.

Mr. Allyn: Let him testify.

A. Yes. Some difference there, I believe.

[fol. 254] By Mr. Allyn:

Q. This has a spiral spring 47 in the base of the socket, has it not?

A. I would imagine that is where it would be, a spring of that nature. There is the part that went into the head of the screw. This is the part that hooked onto your socket (indicating).

Q. That is the one that you say you took out and put on the outside of the socket later?

A. Yes, thermostatic metal. That was the spring we took out from the inside of the socket—in the bottom of the socket—and put it on the outside of the socket.

Q. And all those that you sold commercially had that spiral spring 47 on the outside of the socket, did they not?

A. I would say they did. There might have been a few in the very beginning that went out with the thermostatic metal in the bottom of the socket, but I don't believe we have any record of it. I don't remember.

Q. Did you make any tools for the commercial production of a socket having a large base like that shown in Figure 15 of that patent? It would be quite a trick to make tools for that, wouldn't it?

A. Yes, it would. You would have to use a divided die for that, I imagine.

Q. You didn't have any divided die, did you?

A. Not that I remember. I wouldn't say we did. That could have been spun that way. No, it could not, either. I doubt it. I wouldn't know about that at all. I don't recollect that.

Q. You never made any commercial lighter that way, did you?

A. I am pretty sure we did not; not that I know of.

Q. Do you know whether you used the same kind of thermostatic metal in this spiral 47 that you did in the latch member or contact when you did use thermostatic metal in the contact?

A. I would say we did, because I think at that time our [fol. 255] source of supply was the Chase Valve Company, and I think they had only one kind of metal, and that might have been an experimental part.

We probably found it was not right. Now, since I recall a little bit I think part of this was thermostatic metal backed up by a cold-rolled piece. We did make some of this. That was simply to reinforce this contact (indicating).

Mr. Allyn: I think that is all.

Redirect examination.

By Mr. Huxley:

Q. Mr. Head, before you were shown these patent drawings just now during cross examination had you made any examination of them?

A. No, I had not.

Mr. Huxley: That is all.

Mr. Huxley: Now, Mr. Allyn, as I mentioned we have the invoices of the Jessop Company in Chicago for the year 1928. They happened to have them available and I have a list here showing the shipments of these automatic lighters. Would you care to stipulate that this list is as shown in the invoice and that those shipments were made?

Mr. Allyn: I don't object to the list, but I am still somewhat in the dark to know what the construction was that was shipped. I think that Mr. Head's testimony has been very enlightening in some respects, but it does not tell us what the structure was that was sold.

Mr. Huxley: I think we have shown that by these exhibits, and the things are identified in the invoices as the Jesco automatch cigar lighter, and on the shipments for Montgomery Ward, for example, the catalog number is given.

[fol. 256] Mr. Allyn: I have no objection to your using the list in lieu of the book of sales slips, but I don't admit that structure shown in the patent.

Mr. Huxley: The heading of this is "Shipments of Jesco Automatch as Indicated by Invoices of S. T. Jessop Company, Incorporated." That is all I am asking. If you would like to stipulate it, all right.

Mr. Allyn: I have no objection to it in that form without admitting what the structure was.

Mr. Huxley: Very well.

I introduce this list as Plaintiff's Exhibit 39.

(Plaintiff's Exhibit 39: List headed "Shipments of Jesco Automatch as Indicated by Invoices of S. T. Jessop Company, Incorporated.")

I should like to recall Mr. Head for one more question.

ALLAN J. HEAD, recalled as a witness in behalf of the plaintiff, testified as follows:

Direct examination.

By Mr. Huxley:

Q. Mr. Head, I am showing you Plaintiff's Exhibit 12. Will you state whether or not, as nearly as you can remember, that represents shipments that were made to Montgomery Ward during the year 1928?

A. I would say it would.

Mr. Allyn: I am sorry; I didn't hear that question.

Mr. Huxley: I asked him whether this represented shipments that were made to Montgomery Ward during the year 1928.

[fol. 257] Mr. Allyn: What does the word "represented" mean?

The Witness: I would say these were the same kind of lighter, exactly the same principle and all.

By Mr. Huxley:

Q. This Plaintiff's Exhibit 12, the standard commercial lighter?

A. Yes, I would say it is.

Cross-examination.

By Mr. Allyn:

Q. In this Plaintiff's Exhibit 12, do you know what the construction of the latch, or contact, is?

A. I imagine the last ones—the one I remember now was a piece of cold rolled steel—hard-tempered cold rolled steel in an oval shape.

Q. All in one piece? You are speaking from memory now. Are you sure about it?

Mr. Huxley: In other words, you don't want to show him the sample, but you want to test his memory?

Mr. Allyn: That is it exactly.

A. I would say all in one piece.

Mr. Allyn: That is all.

Mr. Huxley: That is all.

[fol. 258] ARTHUR A. JOHNSON, recalled as a witness in behalf of the plaintiff, in rebuttal, testified as follows:

Direct examination.

By Mr. Byrne:

Q. I call your attention to Exhibit 11, which is sheet 2 of the Mead patent in suit. While Mr. Wolfson was on the witness stand, and with that drawing before him, he made reference to a keyhole of some nature. Did you understand what Mr. Wolfson had to say?

A. I understood what he said.

Q. Will you please explain whether or not there is a keyhole construction there?

A. No, there is no keyhole construction there through which the contact 75 may pass. I explained in my direct testimony that the knob is large in diameter—is as large in radius as the radius of the pin, and therefore the pin 75 can be withdrawn in any arcuate position of the knob.

It is different with the commercial device such as Exhibit 12. That has a keyhole slot, but in the drawing there is no such thing. You can pull it out at any angular position it happens to be in without danger of short-circuiting.

Q. Will you please turn to the patent of Copeland, No. 1,844,206. Will you tell me whether or not you heard Mr. Wolfson's testimony with regard to this patent?

A. I did.

Q. Do you agree with his testimony as to the construction and operation of the device shown in that patent?

A. I do not.

Q. Will you point out the particular or particulars with which you disagree with Mr. Wolfson, basing your remarks with respect to the showing, of course, of this Copeland patent?

A. The igniting resistance coil 14—the reference numeral [fol. 259] is in the middle of the tube in Figure 2—is mounted on a base of refractory material. Refractory material is material that reflects the light away from the thing producing the heat, and that isolates that part of the tube which contains the igniting resistance coil from the part of the tube which contains the bimetallic strip 24. Besides that the very operation of the Copeland device requires a circulation of air across the face of the igniting

coil, and for that purpose there is a hole shown diagonally away from the reference numeral 4 in Figure 2. That permits the air to come in, and there is a hole on the opposite side.

Q. Will you please look at Figure 6, Mr. Johnson, and see if the holes to which you referred are not identified there by references 18 and 19?

A. Yes, they are identified by reference in Figure 6, but the holes are also in Figure 2, which is the construction we have been talking about.

The hole corresponding to 19 would permit the heat to escape. Now, some of the heat would go up through the tube unless the tube was completely filled by a large cigar, but if you had a cigarette in there, for instance, as shown in dotted lines, a good deal of the heat would go up through that tube. In view of that, in my opinion the bimetal contact member 22 is controlled by the resistance which is wound around it, quite independently—

The Court: Just a minute. Did you say 22?

Mr. Byrne: 24.

The Court: 22 is a pivot.

A. Yes, sir, I should have said 24. That bimetallic strip 24 is controlled solely by the windings around it and quite independently of the heat coming from the resistance coil 14, which is the working resistance.

[fol. 260] I recall Mr. Wolfson saying that with regard to the device coming to incandescence that you could light the cigar or cigarette before it became incandescent. That is a fact. You don't have to have the resistance glowing white hot if you leave the cigar or cigarette in contact with the resistance long enough, but the point here is that the resistance 14, which is used to light the cigar or cigarette in Copeland, should be brought to incandescence as rapidly as possible, in order to get as much heat as you can, and should be left on. That is left in that glowing condition a sufficient length of time to light the most moist, probably, cigar that you would come across.

Of course, that time would be controlled solely by the heat generated by the coil of wire around the bimetallic strip 24.

There was a device something like this Copeland device put on the market except for the thermostatic feature, and I have a sample of it here. I could demonstrate, if you care

to see it, how quickly this resistance comes to incandescence and that it can remain in incandescent condition and should for the period of time required to light the cigar or cigarette.

By Mr. Byrne:

Q. Does this device that you have in your hand have a trade-mark or trade name?

A. Yes, this is called the Self Lighter, and it has a resistance wire in the base, which quickly comes to incandescence and which in this device you allow to remain incandescent until you take the cigar or cigarette off the device.

Q. About how long have you had this device that you have in your hand?

A. Oh, I have had this particular device about a year, I think.

Q. Do you know by whom it was made?

A. I understand it was made by a Mr. Diack outside of [fol. 261] Detroit, somewhere. He submitted it to us. He wanted us to take a license under his series of patents, including this very Copeland patent.

Q. By that you mean number 1,844,206?

A. That is right.

Mr. Byrne: It will take but a minute to give this demonstration, and I should appreciate it if you would allow us to do it.

The Court: What significance has it?

Mr. Byrne: It is a device made according to this Copeland patent, we understand.

The Court: There is no evidence of it?

Mr. Byrne: But it is without a thermostat. When they came to make it they did not make it with a thermostat, this particular Copeland thing.

The Court: Very well, if there is no objection.

Mr. Allyn: How does that become pertinent, your Honor?

The Court: I don't know.

Mr. Byrne: I don't think you are very much taken by surprise. You are licensed under this Copeland patent. You know all about this device. That is, your client does.

Mr. Allyn: I don't know. That has nothing to do with the point involved.

By Mr. Byrne:

Q. Have you tested the device that you have in your hand?

A. Yes, I put this device across the battery and the resistance wire became incandescent as fast as the resistance wire used to become incandescent in the old reel-type lighter. In the reel-type lighter and in this type of lighter you brought the device to incandescence and then you held it in engagement with the cigar or cigarette while the current [fol. 262] was still going through the resistance. In other words, the resistance continued to work during the lighting of the cigar or cigarette. In the wireless type of lighter the resistance is electrically dead when you are using it.

Mr. Byrne: I will ask that that device be marked for identification.

(Plaintiff's Exhibit 40 for Identification: Self Lighter made by Mr. Diack, of Detroit.)

The Witness: The reason that I mention that characteristic of this self-type lighter is that if the bimetal strip 24 in the Copeland patent 1,844,206—If this bimetal strip 24 was so selected that immediately upon the resistance coil 14 coming to incandescence the circuit was open, then there wouldn't be time for the cigar or cigarette to be lighted; so in the Copeland device it is a pure timing device, and the operation of the bimetallic strip has nothing to do with the surface conditions of the igniting resistance 14.

By Mr. Byrne:

Q. Now, Mr. Johnson, will you please turn to the drawing of this same Copeland patent and tell me what that part is which is marked 15?

A. That is a refractory base—ceramic base, I presume. He describes it as a refractory base on which the resistance coil that lights the cigar is supported.

Q. Would that have anything to do with retarding heat from the coil 24 with respect to the ignition end of it?

A. Yes, it would reflect back toward the cigar and away from the chamber which contains the bimetallic strip. Outside of the holes through which the wires pass, except at the top, you have no circulation of air in there at all.

[fol. 263] Q. Is there any problem in this Copeland patent No. 1,844,206 of storing heat in an ignition coil as in a wireless lighter?

A. No, the problem of storing heat does not present itself here, because you have the resistance connected to the source

of current while you are using it, and there is no need of storing it. As a matter of fact, the idea is to get the heat on the cigar and try not to store it anywhere else.

Q. Mr. Johnson, some questions were asked of Mr. Wolfson which pointed out the outline of a cigarette and the outline of a cigar in Figure 2 of this Copeland patent about which we are speaking, and the inquiry was made as to whether or not the presence of the cigar or the cigarette would retard the passage of air—the draft up through the hole or opening into which the cigar or cigarette is placed. What have you to say as to that?

A. Of course if the cigar fitted the hole it would stop all draft coming up through this chimney, but you would still have the transverse draft go under the deflector 21.

Again getting back to that deflector: If there is a draft or if there is any breeze coming, as for instance from a cowl vent, it would be caught by that 21 and would be fed across the end of the cigar, which is in engagement with the resistance wire, and that would be a forced draft, but the normal thermal chimney effect would be the other way.

Q. How is that chimney effect produced the other way, that is, up through the opening in this device?

A. If you had a large cigar on there so as to stop the draft in a direction, let us say, northwest from this drawing, then the draft would go northeast through the two apertures.

Q. Is that brought about by the fact that you might have some heat on one side and cold air on the other?

A. That is the only way you would get the draft there—[fol. 264] mally. I explained that. If you have any wind blowing in there, the deflector 21 will supply the draft.

Q. If I have a partially-smoked cigar, and desire to attempt to relight it with a device of this Copeland patent No. 1,844,206, could I very well push it down by the end that had been chewed down?

A. You could if it was your cigar; I wouldn't want to. It depends how close you smoke them. The point is, to get a real light after having smoked or possibly chewed the end of the cigar, you would have to push it down into the hole, and then you might not be able to get it out. This resistance 14 of Copeland does not perform the functions of a match in lighting a cigar or a cigarette, and the resistance in a

wireless cigar lighter is intended to perform that function as safely as possible.

Q. When you take it out and away from its circuit after it has been heated, does it take the place of a match?

A. Yes, except that it is not so dangerous as a match.

Q. In your testimony a short while ago, you made mention of a dry cigarette or cigar—I don't know which you took for an illustration—and you made some reference to heating it in the device of the Copeland patent 1,844,206. Would the same condition exist if I had a fresh cigar or cigarette?

A. Well, this Copeland device should be able to light the dry cigar or a fresh one that has been in the humidor, because in any design of device you would make the time interval so great by proportioning the metal and the resistance of the bimetal that you would have long enough time to light the cigar under adverse conditions, and there is nothing critical. You could keep it on perhaps a minute with this Copeland type lighter without any difficulty. You would have the difficulty there, however, of ascertaining when your cigar was lighted. You might learn that from experience if you kept smoking the same brand of cigar from your own humidor, but if you extend the period of [fol. 265] time during which Copeland operates, so as to take in the whole range from, we will say, a dry cigarette to a fresh, damp cigar, then there is nothing to indicate to you when your cigar or cigarette is ready to be taken out and used. You may see the smoke coming out, and that would be a pretty good indication.

Q. In the normal lighting of a cigar or a cigarette in a device such as this Copeland patent, if you left it in there unduly long, quite an ember could be found on the end of your cigar, could it not?

A. Oh, yes. It would not matter a great deal. The radiation there could be so great—the dissipation of heat could be so great as not to do any serious damage.

Q. Now, Mr. Johnson, back in the time of Mead, in 1926 and 1927, were you an active worker in the art? Did you classify yourself as such?

A. Well, I was constantly in contact with the developments of the aut-mobile cigar lighter, and I was striving to improve the cigar lighter, particularly the wireless type of lighter, which was just then making some impression on the art.

Q. Mr. Johnson, will you tell me whether or not on or about August 24, 1927, which is the date of the application for the Mead patent, there was any patent or publication of which you were aware which disclosed the use of a thermostat in an electric cigar lighter for any purpose whatsoever?

A. There was nothing, to my knowledge.

Q. At the same time, say at or prior to August 24, 1927, did you know of any cigar lighter or cigar lighter disclosure in a patent in which the current supply circuit was closed and kept closed, other than by manual control?

A. I know of no construction in a cigar lighter where you could close the circuit and leave it alone—take your finger off, and that statement is true, so far as my knowledge is concerned, whether it is a wireless lighter or a real lighter or just a plain cigar-counter lighter.

[fol. 266] Q. When you took your hand off, the circuit was immediately broken?

A. Yes, it depended upon manual control to keep the circuit energized, that is, to keep it energized while you used it.

Q. Prior to August 24, 1927, the date of the Mead patent, did you know of any disclosure in a patent or publication of a latching of an ignition unit in energized position for any purpose?

A. In a cigar lighter?

Q. Yes.

A. No.

Mr. Allyn: What has this got to do with whether this gentleman in 1927 knew of the existence—

Mr. Byrne: The next question will tell, Mr. Allyn. I don't mean to be evasive. I will state the reason if your Honor desires it. Mr. Johnson was a worker in the art—a skilled worker in the art at that time—and I want to ask his opinion as to whether or not at that time if he had been shown the disclosure of this Copeland patent 1,844,206, it would have disclosed to him the idea such as is embodied in the Mead patent.

Mr. Allyn: I certainly object to that. I think I was excluded from asking a similar question of Mr. Wolfson.

Mr. Byrne: I think not.

Mr. Allyn: As to whether it would require any skill.

The Court: Will you restate your question?

Mr. Byrne: May I put it in the form of a question?

The Court: Yes.

By Mr. Byrne:

Q. Mr. Johnson, in the light of your personal experience and the experience which you have related, assuming that [fol. 267] you had the skill of a model maker or a worker in the art, such as you have, if disclosure of this Copeland patent 1,844,206 had been brought to your attention, would it have suggested to you that a wireless lighter might be advantageously made with a thermostatic control?

Mr. Allyn: I certainly object to that.

The Court: I think that is a backhanded way of asking the witness to make the distinction between mechanical skill and invention.

Mr. Byrne: Very well, your Honor. Of course, ordinarily you can ask for an opinion, and I have asked it as a matter of opinion.

The Court: I don't think you are entitled to ask for an opinion on the ultimate issue.

Mr. Byrne: Very well.

By Mr. Byrne:

Q. Mr. Johnson, I think you testified the bimetallic switch of Copeland is not controlled by the heat of the working resistance, did you not?

A. Yes, I did.

Q. Have you considered the Smith British patent No. 285,200 and the Rupps British patent No. 298,073 with reference to an automatic wireless cigar lighter such as the Mead patent in suit, and if so, will you point out the constructions, showing whether or not they embody the invention of the Mead patent, so far as you know?

Mr. Allyn: I didn't introduce that Smith British patent.

Mr. Byrne: I beg your pardon. Not the Smith British patent, but the Rupps British patent.

[fol. 268] Mr. Allyn: I thought you mentioned it in the question.

Mr. Byrne: I mentioned both, because the Rupps was there too.

Mr. Huxley: We introduced the Smith British patent.

A. Yes, I have. The Smith British patent is a wireless cigar lighter. It has a base portion and an igniting unit, generally indicated by the reference numeral 25. This is an

open-faced lighter. The igniting unit is in a recess in the front face. The heating element is in the open or front face of the igniting unit.

The igniting unit has a flange 24, and the holding device or base 15 has a horse-shoe-shaped grip or socket, the part being marked 23, and that receives the flange 24 and holds the igniting unit in normal position. One side of the circuit is closed through the shell or the flange 23 on the holder engaging the flange 24 on the igniter, while the other side of the circuit is closed by a contact 27 on the igniter engaging a yielding spring 28 on the holding device.

Q. When it is desired to use the cigar lighter, the operator presses a switch lever 19. He does not touch the igniter in this case at all; he just pushes in on the switch lever 19. That closes a circuit between the contacts 18 and 29, and then the current flows through the respective parts to the current supply terminal.

In this circuit, on the way between the igniter and the current supply terminals there is a thermostatic device which receives its heat from the heating element or by the current flowing through, and opens and closes the contacts 8 and 9 as the device heats up and cools off. Meanwhile you hold this lever 19 in position. If the driver is pushing in on the lever 19 and forgets that he has his hand on it, [fol. 269] the circuit opens automatically between the contacts 8 and 9, and then if the igniting unit cools off, the contacts close again, and it will come up to heat. Of course, that would not happen very often, because if you want a light, you will pay attention to it, and when you use the igniting unit—and when you see the igniting unit glowing you release your hand from the switch. There is nothing in this patent to releasably hold the igniting unit in energized position—that is, in energized position until the resistance coil is hot enough for use or, in fact, to hold anything.

You have to hold the circuit closed by hand yourself. It is not an automatic lighter of the full character disclosed by Mead.

The Rupps patent is rather an impractical device. In this Figure 1 the main body portion marked "E" is the igniting unit. The bottom portion is the igniting unit and the top part, marked "A", along with the contact fingers b-c constitutes the holder. The igniting resistance is marked "K".

This is an inverted lighter. These springs, contacts b and c snap into a recess within the body "E" and in that way the igniting unit would hold the device together. When you want to use the cigar lighter you rotate the igniting body "E" until the contacts b and c, respectively, engage contacts F and G, on the igniting unit. These contacts F and G ultimately lead to the resistance coil, but between the ends of the contacts and the resistance coil there is a switch member G which normally engages a member O. However, when the igniting unit reaches the proper temperature for use, a capsule very much like that coffee pot that Mr. Allyn spoke about—it is marked "M" in Rupps—expands and moves the contact "G" out of engagement with the resistance coil, so that the circuit is automatically opened. [fol. 270] Nothing happens to the igniting unit, however. It stays in that position. There is no spring for rotating it, and if you don't take it off and use it at that time, the resistance K will cool off and the circuit will again be closed.

That is a hunting type of thermostat. That merely maintains a desired temperature. There is no automatic operation except the mere maintaining of a temperature. There is nothing to eject. After the user puts the device on the dash back, he must be careful to see that the contacts B and C are not in engagement with the contacts F and G; otherwise he will drain his battery.

Mr. Byrne: I offer in evidence the enlarged drawing of the British Smith patent referred to by the witness, and ask that it be marked Plaintiff's Exhibit 41.

(Plaintiff's Exhibit 41: Enlarged drawing of British Smith patent.)

Mr. Allyn: I don't understand the purpose of this exhibit.

Mr. Byrne: I will also offer in evidence the enlarged drawing of the British Rupps patent No. 298,073, and ask that it be marked Exhibit 42.

(Plaintiff's Exhibit 42: Enlarged drawing of British Rupps patent No. 298,073.)

Mr. Byrne: If your Honor please, the enlargements are those from which Mr. Johnson testified, and those two patents are, in point of fact, in here.

The Court: I know that they are in. Mr. Allyn does not understand the purpose of their being in, and I do not, either.

Mr. Byrne: It is just this: They are in there. It is like the end at a football game. He is out wide and he may be [fol. 271] dangerous. We don't know why he is there. Similarly, we don't know what arguments may be raised, and I would like to have that within the confines of the record.

The Court: What are you citing it for?

Mr. Byrne: They do show in about the period that Mr. Mead made his invention.

The Court: This is long after Mead.

Mr. Byrne: In the period after Mead, that is correct. The misdirected efforts of the inventors in the art, showing that they did not perceive, even at that time, what Mead accomplished in his patent. That is one point we wish to make.

By Mr. Byrne:

Q. Mr. Johnson, were you acquainted with Mr. Copeland, who is the patentee of this patent, 1,844,206, about which we referred to?

A. Yes, I know him.

Q. I show you a patent granted on the application of Francis C. Copeland, No. 1,919,159, which was granted on an application filed August 27, 1924, three days after the date of filing of the application for the Mead patent in suit. Do you know whether or not that patent was one which was taken out by Mr. Copeland of the patent about which we have been talking, No. 1,844,206?

A. It is.

Q. Is there a thermostatic feature in this patent that I just tendered you?

A. Yes.

Q. No. 1,919,159?

A. There is no thermostatic feature.

Mr. Byrne: I offer in evidence a copy of the Copeland patent 1,919,159, which has just been identified by the witness.

Mr. Allyn: I object to that as not being pertinent or material.

The Court: Can I see it?

[fol. 272] Mr. Byrne: The purpose of the offer of this patent is to show that at the time of the filing of it, which was three days after the filing of the Mead patent, Mr. Copeland, who is also patentee of the patent No. 1,844,206, upon which some reliance appears to have been placed, did not apparently know about the use of a thermostatic lighter which was controlled by the heat of the resistance coil.

Mr. Allyn: He might have applied for a flying machine.

The Court: It shows a thermostatic control in his first application. The omission in the later one does not obliterate his earlier knowledge, does it?

Mr. Byrne: No.

The Court: I don't see your point.

Mr. Byrne: It may seem far-fetched, but if Copeland in his patent No. 1,844,206 had appreciated this matter of thermostatic control he undoubtedly, in our opinion, would have embodied it in this patent which you have in your hand and which I have just referred to the witness.

The Court: How can you say that? Your own evidence shows that simultaneously there is a substantial use for both the automatic and the non-automatic devices. Because he files one application for an automatic device, what significance can a subsequent application for the other style have?

Mr. Allyn: May I add this? The plaintiffs own that patent. That is one of the patents they sued Sinko on last spring.

Mr. Byrne: That does not add anything to the point that I am attempting to raise here with respect to it. I don't know back there how long Copeland might have had the application for that particular patent in the grist being pre-[fol. 273] pared, but it was very curious to me to observe that three days after the filing of the Mead patent he was still working on the old order of things. That was the reason I attempted to project it. I think it is material, but how material our minds, of course, greatly differ on. It really goes along with the efforts such as in the Rupps and Smith British patents.

The Court: It is an entirely novel matter to me, after so much prior art has come in, to put this in.

Mr. Allyn: I don't see why he should be compelled to invent thermostatic lighters.

The Court: Is this prior or subsequent to Mead?

Mr. Byrne: That particular patent?

The Court: It is three days later.

Mr. Byrne: Filed three days later than the Mead application.

The Court: Is it offered on Mead or on Copeland?

Mr. Byrne: I offer it as against this Copeland patent about which we have been heretofore talking.

The Court: Copeland is not in issue. For what issue in this case do you make this out?

Mr. Byrne: This other Copeland patent about which we have talked so much appears to have been something of an issue in this case, and this other effort of Copeland, himself, the same patentee, intended to show what he was doing about the time of the filing of the Mead application. Time is getting on and I will withdraw it rather than have any more time taken with it.

The Court: It really does not seem to me very useful. I am a little puzzled at the offer, and don't want to inadvertently make a technical error.

[fol. 274] Mr. Byrne: For the time being, may I mark it for identification?

The Court: Mark it for identification, Mr. Carroll.

(Plaintiff's Exhibit 43 for Identification: Copeland patent No. 1,919,159.)

By Mr. Byrne:

Q. Mr. Johnson, will you refer to the second Cohen patent in suit? Are any tongues illustrated in that patent to provide for a frictional engagement between the plug and the socket?

A. No, there are no tongues shown on the sleeve 38 which would provide that frictional—yielding frictional contact that you speak of.

Q. Is that an expedient which was well-known in the cigar lighter at that time?

A. It was at that time, and the same thing is shown in the Wolfson patent. Wolfson had these tongues lanced out from the side of the receptacle or socket or plug or wherever you want to have them.

Q. Will you turn to your notes, so that it will be intelligible a little later, and tell me what Wolfson patent you refer to?

A. I am referring to the one that was discussed here this morning, 1,980,157. In Figure 2, the second piece from the

left, we see the sleeve 3, which has these lanced tongues 19 that are provided for just that purpose of yieldingly holding the igniter and holding device together against inadvertent separation when the spring 17 was released.

Q. It was common practice at that time?

A. At that time, yes.

Q. Now, will you please turn to the Denhard patent 1,143,572, about which some testimony has been given by Mr. Wolfson. Will you please state with respect to that patent whether the problem that was worked upon by Den-[fol. 275] hard is the same as any problem in the wireless cigar lighter, and if not, will you please state why?

A. No, the problem is not the same at all, because in Denhard and in these electrical appliances, you want to control the temperature of the appliance itself. This being a sad-iron, the thing to do is to control the temperature of the sole plate or base of the iron. It does not make a particle of difference whether the resistance wire that is heating the iron is higher or lower in temperature, and in almost every instance, in order that the direct radiation of the resistance coil will not affect the thermostatic member, there is some kind of heat wall or insulation provided, such as the mica plate 6 in the Denhard patent. The only thing in common between Denhard and the wireless cigar lighter is that in each of them they have an automatic arrangement for opening the circuit, as a safety device; not in regulating the temperature of the resistance wire at all.

Q. Now, Mr. Johnson, will you please refer to Andrews patent No. 1,925,852. Can you tell from the disclosure of that patent where the resistance is located with reference to the bimetallic strip?

A. No. In this patent the position of the resistance coil is not illustrated. Figure 4, which shows it diagrammatically, does not give any reference numeral. In Figure 1, where there is part of the iron broken away, it is clear that the bimetallic strip 15 is quite a ways up from the base of the iron, and I would assume that this is one of those irons where the resistance wire is built in the sole plate or directly over the sole plate.

Q. Was there a problem before with respect to which Andrews addressed himself in that patent common to the wireless cigar lighter art?

A. No, because here again he is measuring the temperature of the iron. He is not as close to getting the actual tem-

[fol. 276] perature control of the sole plate as Denhard, because his bimetallic strip is secured way up in the iron itself. Nevertheless, it is to prevent overheating of the iron.

Q. Tell me what you mean by the term, "sole plate."

A. It is the usual term in sadirons. It means "bottom plate," or the sole—s-o-l-e, of the iron.

Q. Now, Mr. Johnson, will you please turn to Metzger 1,622,334, and tell me whether or not the outer part—the upper part in Figure 1 is adapted to be rotated.

A. Yes. If you put the igniter of Metzger onto the holding device, and want to cause the circuit to be closed, you push in on the igniting unit and then rotate the igniting unit until the locating pins 32, shown in Figure 3, the tiny little pins down in there, come into notches in the igniter, and at that time the contacts 2 and 4 on the igniter engage the contact 17 on the holder. The circuit is closed by rotating the igniting unit. There are two ways of doing it. You can either rotate it to close the circuit or push it in, or you can do as Smith did, put a separate button on it.

Q. Will you please turn to 1,838,363, the patent of Copeland. How close is the thermostat with reference to the heating element in the device portrayed in that Copeland patent?

A. Well, it is very difficult to understand the exact location of the thermostat in this Copeland patent. The time switch—that is what I call it; it is not really a thermostat—is shown in Figure 10, and the button for it is marked 21, but it is not shown in any other figure, and from the specification I gather that you would utilize that mechanism shown in Figure 10 in lieu of the handle 21 on the slide in Figure 7. That slide allows one cigarette after the other to drop down, and closes the circuit by manual control in Figure 7, and I take it from the specifications that you simply substitute this button arrangement of Figure 10 for that push [fol. 277] slide 21 in Figure 7. That would take the bimetallic strip of the time control completely away from the igniting unit coil, which, in this case, is marked with the reference numeral 27 in Figure 6, and is located at the bottom of an inclined shelf.

Q. Is there any feature about any of these patents that have been introduced here that I failed in my hurry to ask you about here, Mr. Johnson, that you think might be of help in the disposition of the issue?

A. No. The only thing I would say was in connection with that Copeland patent which was marked for identification, the 1,919,139. I do not know whether it was made clear that that was a wireless type lighter as distinguished from the self lighter type of the Copeland patent 1,844,206.

Mr. Byrne: Thank you for that. I did not ask that question. I overlooked it.

Cross-examination.

By Mr. Allyn:

Q. Are the points just discussed by you the only ones in the testimony of Mr. Wolfson with which you seriously differ?

A. Oh, I couldn't say, Mr. Allyn. I just made notes of a few points that were striking, and I spoke to Mr. Byrne about them. I will try to think a moment if you want me to try and recall what he testified to.

Q. You referred to the Copeland patent as having a refractory member 15 which supports the heater or igniter coil 14. Is that right?

A. Yes, sir.

Q. Now, do you know the difference between a refractory material and a heat-reflecting material?

A. Oh, yes. I know that refractory material very often reflects heat. I would say a reflecting material such as a sheet of mica might not serve the usual purposes of refractory materials.

[fol. 278] Q. But a refractory material sometimes gets very hot, does it not?

A. Oh, yes. It is supposed to stand heat.

Q. It is supposed to stand it without damage?

A. That is right.

Q. That is the only thing it means?

A. No. I think it is also used for reflection of heat, too. I think refractory ovens—

Q. Was there anything in the Copeland patent about reflecting heat from it?

A. No.

Q. Then we can assume, I think, that refractory meant it would withstand the temperature of the device is that correct?

Mr. Byrne: I object to that, if your Honor please. We might assume what is stated in the patent on that.

May I have an answer to that, sir?

The Court: Is there objection to the question?

Mr. Byrne: I withdraw it. Go ahead.

The Witness: I have forgotten the question.

The Court: Read the question.

(The reporter read as follows):

"Q. Then we can assume, I think, that refractory meant it would withstand the temperature of the device; is that correct?"

A. That is right.

By Mr. Allyn:

Q. Do you notice that that member 15 is pivoted at 22?

A. Yes, sir.

Q. And you notice that there is a space around the edge of the member 15?

A. Yes, sir.

[fol. 279] Q. Then there could be convection of heat through that space, could there not?

A. There could be, but I doubt whether it would be.

Q. It would be small. That is your point, I take it.

A. Yes, because the whole chamber there is enclosed on the bottom, except for the holes that the wires go through, and I think that is only a diagrammatic showing.

Q. Anything that requires it to be imperforate?

A. No.

Q. I understood you to say that the bimetallic member 24 had nothing to do with the condition of the coil 14; is that correct?

A. Nothing to do with it?

Q. Yes. I think that is the language you used.

A. No. When it moves it opens the circuit of the coil 14.

Q. Then if you said what I just quoted, you were in error?

A. Well, maybe I didn't understand your question. But when you say, "nothing to do," I don't know what you mean.

Q. I wrote it down. I thought I had it correct, but perhaps I didn't. Now, the problem of storing heat in an igniter coil was not new with Mead, was it?

A. No, sir.

Q. I think you said that the coil was not controlled by the temperature of the thermostat; is that correct?

A. The resistance coil 14—well, I say the same thing I did before. The thermostat—thermostatic bar 24 opens the circuit to the coil, but it is not the heat from the coil 14 which does the controlling.

Q. But the temperature of both goes up together, does it not?

A. No, sir. I would say absolutely not. The thing wouldn't work if you did it that way.

Q. Did they go in opposite directions, the temperature?

A. No, they go up. One goes up and while the other is going up—when you say “together,” I assumed you meant at the same rate of advance.

[fol. 280] Q. No, I mean they rise at the same time.

A. At the same time, yes.

Q. When a cigar or cigarette is placed against a cold coil of resistance wire and current is turned on, the tobacco will be gradually brought up to an igniting temperature, will it not?

A. That is correct.

Q. And when the tobacco is sufficiently heated, it will ignite whether the coil is red hot, white hot, or only black hot?

A. Black hot? I do not know what that is. But I think I stated it did not have to be incandescent.

Q. That is what I meant.

A. But it took a long time to light a cigarette if it was not incandescent.

Q. Now, those British patents both show cordless lighters, don't they?

A. Yes, sir.

Q. They both show automatic circuit-breakers, don't they?

A. Yes, sir, stated as you stated it.

Q. You referred to Wolfson 1,980,157 as showing a disclosure of spring tongues 19 for holding the plug in or on the socket. Is that right?

A. Yes, sir.

Q. Now, they have to be designed to withstand the conditions to which the device is suggested, do they not?

A. I should think so.

Q. I beg pardon?

A. I should think so.

Q. Did I understand you to say that in a cigar lighter you did not want to control the temperature of the ignition coil?

A. No.

Q. Then you do want to control the temperature?

A. Of the ignition coil?

Q. Yes.

A. Oh, yes. That is what you really want to control.

Q. In Andrews, I think you said there was no illustration of the heater element. Isn't the strip 14 referred to the heater element or part of the heater circuit? (Pause.) I will withdraw that question.

A. Yes—pardon me.

Mr. Allyn: Are you through?

Mr. Byrne: Yes.

[fol. 281] The Court: I think you had better put it in.

Mr. Huxley: I will offer that again, whichever way is agreeable to you, your Honor, but I would like to have your Honor consider Judge Holly's decision and the findings.

The Court: It is all in the record.

Mr. Huxley: Yes, it is all in the record, the whole thing. So I will offer now Plaintiff's Exhibit 7, the record in the Automatic against Sinko case.

Mr. Allyn: I again object to the record being burdened with that. It does not seem to me that it is pertinent.

The Court: I think if anything that may strengthen your case, Colonel; that is to say, under the law of comity I have got to give proper consideration to Judge Holly's opinion. Of course, I could notice that, whether it were in evidence or not. If I proceed merely on the basis of opinion and there is nothing else in the record, I do not see how you can be in any position to distinguish the case. I will receive the record, and I will say frankly that I propose to read thoughtfully his decision. And if the defendants think that the decision is inapplicable here because of substantial differences in the record, I think it is up to the defendant to point to the record to show where those differences are.

Mr. Allyn: Doesn't your Honor think that the things which were considered at the final argument by the Court are just exactly as important as the record itself?

The Court: Aren't they in here?

Mr. Huxley: Yes, they are all here.

Mr. Allyn: You do not understand me. The matters which were considered in the briefs by the Court at the final argument.

Mr. Huxley: I think the record is the thing, not briefs of counsel.

Mr. Allyn: It is a very particular point I have in mind.

[fol. 282] Mr. Huxley: It is what evidence was before the Court.

Mr. Allyn: In this case, the Morris patent was submitted in the answer. And there was not a thing said about the Morris patent in the argument. Now, that is a very important point.

Mr. Huxley: And it was not introduced in evidence and the copy is not in here.

Mr. Allyn: Morris is not in there.

Mr. Huxley: No, the copy of the patent is not, because they did not evidently consider it sufficiently pertinent to put it in, although they did plead it in the answer. The exact facts show here. I will offer Plaintiff's Exhibit 7.

The Court: I think I will admit it for the limited purpose stated.

(Plaintiff's Exhibit 7 for Identification marked Plaintiff's Exhibit 7 in evidence.)

Mr. Huxley: We rest.

Mr. Allyn: If your Honor please, I find one exhibit that I intended to put in was marked for identification but not received in evidence, and that is a drawing which I think has not been disputed, showing one of the forms of the Mead device not shown in the patent. It was marked for identification "Defendant's Exhibit C." I would like to have that marked in evidence.

The Court: I do not remember about that. Is there objection?

Mr. Huxley: No, sir.

The Court: All right. Let it come in.

(Defendant's Exhibit C for Identification marked Defendant's Exhibit C in evidence.)

Mr. Huxley: I certainly appreciate your Honor's—

Mr. Allyn: I think that Exhibit N was also received only for identification. That was discussed.

The Court: What is that?

[fol. 233] Mr. Huxley: That I objected to.

Mr. Allyn: You objected to the device which we had to show.

Mr. Huxley: I also objected to the drawings for the same reason as being a pure matter of argument.

Mr. Allyn: Then we can use it in our brief.

The Court: Very well.

Mr. Huxley: What is your Honor's pleasure about that?

The Court: Is the record closed?

Mr. Huxley: The record is closed.

The Court: Now that the record is closed, do you each feel satisfied to rely on the briefs you submitted?

Mr. Huxley: I think we could, probably. We might be able to save your Honor's time and I think we could probably bring the more pertinent points by argument, oral argument, before your Honor at your convenience sometime, if you would like that, or supplemental briefs.

Mr. Allyn: I feel that same way. There are a number of points.

The Court: We are all agreed that after what we have been through today this is no time for oral arguments.

[fol. 284] DISTRICT COURT OF THE UNITED STATES, DISTRICT
OF CONNECTICUT

Civil Action, Docket No. 97

THE AUTOMATIC DEVICES CORPORATION, Plaintiff,

vs.

THE CUNO ENGINEERING CORPORATION, Defendant

STIPULATION

It is hereby stipulated, by and between the attorneys for the parties to the above entitled action, that the attached copies of the testimony of Herbert E. Mead, Adam John Dunsmore, George W. Johnson and Sidney Thomas Jessop and also the attached copies of exhibits offered in connection with the testimony of said parties, which said testimony of said parties and exhibits comprised part of the proceedings on the trial of the action brought by plaintiff

against Sinko Tool and Manufacturing Company in the District Court of the United States for the Northern District of Illinois, Eastern Division, in Equity, No. 16,188, may be offered and used in this action with the same force and effect as though the testimony of said parties was duly taken in this action and the said exhibits offered in connection therewith, subject to correction if error be made to appear and subject to any objection by defendant as if the said testimony had been taken in this action.

Dated, Sept. 26, 1939.

James T. Kline, George F. Smyth, Attorneys for Plaintiff. Clarence W. Bronson, Attorney for Defendant.

R. S. Allyn, of Counsel for Defendant.
Thomas J. Byrne, of Counsel for Plaintiff.

[fol. 285] IN DISTRICT COURT OF THE UNITED STATES FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

In Equity, No. 16,188

THE AUTOMATIC DEVICES CORPORATION, Plaintiff,

vs.

SINKO TOOL AND MANUFACTURING COMPANY, Defendant

Proceedings had and testimony taken before the Honorable William H. Holly, one of the judges of said court, in his court room in the United States Post Office Building, at Chicago, Illinois, commencing on Monday, March 20, 1939, at 3:00 o'clock p. m.

Present: Henry M. Huxley, Esquire, and Thomas J. Byrne, Esquire, representing the plaintiff; Russell Wiles, Esquire, Bernard A. Schroeder, Esquire, and George A. Chritton, Esquire, representing the defendant.

Whereupon the following proceedings were had:

Thereupon the plaintiff, further to maintain the issues on its behalf introduced the following evidence, to wit:

[fol. 286] HERBERT E. MEAD, called as a witness on behalf of the plaintiff, having been first duly sworn, testified in rebuttal as follows:

Direct examination:

By Mr. Byrne:

Q. Will you please state your full name, Mr. Mead?

A. Herbert E. Mead.

Q. Where do you reside?

A. Detroit.

Q. How old are you?

A. Forty-six.

Q. Will you state the nature of the business in which you are engaged at this time?

A. I am, at the present time, works manager for Bowen Products Corporation, of Detroit.

Q. At Detroit?

A. That is right.

Q. What is the nature of the business of Bowen Products Corporation?

A. Lubricating devices and commercial stampings, pressed metal.

Q. Are you the patentee of one of the patents in suit here, No. 1,736,544? I hand you a copy of that patent so that you may have the number in mind to which I referred.

A. Yes, I am the patentee.

Q. Where were you located at the time that you made the invention of your patent here in suit?

A. We had a little plant at 2152 East Larned, Detroit.

Q. What was the name under which the business was carried on, as you say, at 2152 Larned Street, in Detroit?

A. Well, it was first known as the Central Stamping Company, and afterwards became the S. T. Jessop Company.

Q. So at one time it was the Central Stamping Company?

A. Yes, sir.

Q. And later on it was the S. T. Jessop Company; is that the fact?

A. That is right.

[fol. 287] Q. Can you tell me approximately when you made the invention of your patent here in suit?

Mr. Wiles: That is objected to as asking for a conclusion.

The Court: What he claims is his invention.

Mr. Wiles: I don't mean that. He should state what he did and not when he made his invention.

The Court: All right.

By Mr. Byrne:

Q. You stated that you are the inventor of the patent in suit?

A. That is right.

Q. You signed the application papers for a patent thereon, did you not?

A. Yes, sir.

Q. Approximately when did you make the device which is shown in the patent here in suit?

A. You mean the first models?

Q. Yes.

A. I would say it was in the spring of 1926, somewhere around there.

Q. I hand you a paper and will ask you, please to read it and state whether or not the handwriting thereon is your handwriting, and when you put that handwriting thereon?

A. That is my handwriting.

Q. Do you know when you put that on?

A. 1927, I signed it.

Q. On what date in 1927?

A. August 8th.

Q. All of the handwriting on this paper that I have tendered to you is in your handwriting?

A. That is right.

Q. That is your signature thereon?

A. That is right.

Q. And the date on which you made that is what?

A. August 8, 1927.

Q. That date is also in your handwriting?

A. It is.

Q. When was it put on, please?

A. It was put on at this date here.

[fol. 288] Q. By "this date" you mean when?

A. August 8th.

Q. What year?

A. 1927.

Q. Now, Mr. Mead, tell me, after having read this paper to which I have brought your attention, whether or not the matters stated therein in your handwriting refresh your recollection in any manner with respect to the matter of your patent here involved, as to doing any of the things stated therein.

Mr. Wiles: If the Court please, I object to it in that form. He should exhaust his recollection first.

The Court: I think so.

Mr. Byrne: I agree with your Honor. Your Honor, we should have objected to their taking a shovel to expedite matters on the other side and testifying themselves instead of letting their witnesses do it.

Q. Will you please go on in your own way and tell me, as nearly as you can remember, when you made the device of the patent in suit, and what you did about making up a model?

A. Leading up to the model?

Mr. Byrne: That is right.

A. We were manufacturing a line of automobile accessories, horn buttons principally, and Mr. Jessup became financially interested in the company. I mentioned the fact that I had, among other products that I wanted to manufacture, a cigar lighter that would automatically turn off when the proper heat was reached. He asked me just exactly what it was and I outlined to him the features and he said, "Well, let's get busy and make up a model and get it patented," so I said, "All right." I believe that was in the winter, I believe it was in January or February, 1926, [fol. 289] I know it was awful cold and our old shop did not have very good heating facilities, and I had to work on it myself at nights and on Sundays because I had to take care of the maintenance during the day. It was just a small shop and my first model was a very crude affair. Unfortunately, the parts have been destroyed, but I do remember the testing device I made was still used when I left the company for testing finished lighters. It consisted of a sheet metal coupled with an ammeter with a clock and a six-volt storage battery on the bench.

And, of course, the first model I had to make the core of fiber, and that was adequate for a few tests, but it soon charred and burned up, and after I was satisfied that the

model was practical I purchased some porcelain cores and started to put it out on a production basis.

Q. Did you make any sketches during the early stages of your work?

A. I did for my own information, yes.

Q. Do you know what became of those sketches?

A. I don't know what became of them, no. I don't have any in my possession.

Q. Have you been able to locate them?

A. No, I have not.

Q. Who, do you know, besides Mr. Jessop had knowledge of your work and was told about it, who besides Mr. Jessop was told about it?

A. Well, Mr. Head who happened to be my partner at that time, and Mr. Dunsmore handled the sales and Mr. Johnson, who was Mr. Jessop's partner.

Q. Do you know Mr. Head's first name?

A. Allen J., I believe.

Q. And do you know Mr. Johnson's first name?

A. Lynn.

Q. Mr. Lynn Johnson?

A. That's right.

Q. Did you show one of these devices to the parties to [fol. 290] whom you have referred, Mr. Jessop, Mr. Johnson and Mr. Head?

A. I did.

Q. Where were you when you showed that device to the gentlemen named?

A. Well, of course, Mr. Head and Mr. Dunsmore were with me there at the plant and watching the progress as we went along.

Q. Did you give Mr. Dunsmore's first name?

A. His initials are A. J. I don't know his first name. They called him Jack.

Q. And all this up to now transpired at the plant at 2153 East Larned Street, Detroit, is that it?

A. Yes.

Q. You made up a model which you said had a fiber bushing, did you not?

A. That's right.

Q. Will you look on the patent here in suit, your patent, and point out to me the part thereon which corresponds to that part which you say was made of fiber?

Mr. Wiles: I object to that. There is no proof that is the structure of this thing. He made something in 1926 he says.

Mr. Byrne: I can't give way to the light of the gentleman on the other side. I asked if there is a part that corresponds to it on that drawing.

The Court: I think I shall let him answer this question.

A. It was this part, the core, as I stated.

By Mr. Byrne:

Q. When you are pointing to this core you are referring to Fig. 11 on your patent drawing, is that it?

A. That's right.

Q. Can you describe, please, the device which you made up at Detroit at the early time when you were with the Central Stamping Company?

A. Can I describe it?

[fol. 291] Q. Yes.

A. Well, I believe I can, the fundamentals of it anyhow. It was a round fiber base. The metal parts that held the contact point, I filed them up and bent them up in a vise, and the socket that holds the core also, then the contacts were fastened and made of bar stock. I made that on the lathe as well as the contact cup that holds the resistance wire, and the socket that the knob went into was also made of bar stock turned on the lathe. We went down to the dime store, I believe, and found some stock Bakelite knobs, and I turned them on the lathe and on the bench, and it was a very crude looking affair, and the first ones I did not even put a case over the outside until I had gotten where I wanted in the way of mechanical movement.

Q. Will you be good enough to describe the contacts and the plug in your device?

A. The contacts from the heating element do you mean?

Q. That's right.

A. If I remember correctly the resistance wire was fastened to the outer shell, and I had a screw going down through the center, fastened to the other end of the resistance metal which drew it into a little square plug, one-eighth of an inch square, in the center of the core, and that in turn contacted the phosphor bronze button on the outside.

Q. Will you please state how the circuit was closed and how you operated the device, moved it in and off position?

A. This one-eighth inch square plug was turned to an angle and it engaged into a V-shaped slot in the contact point as you revolved it to the right, and when the element reached the proper degree of heat it strengthened the coil in the bottom of the socket and the heat generated and reflected from that, lessened the tension on the outside contact, and the other coil on the bottom strengthened and pulled it off the latch.

[fol. 292] Q. What was the coil made of?

A. Thermostatic metal or bimetal.

Q. Bimetal. Now, Mr. Mead, will you please look at the two sheets of drawings in your patent and tell me whether or not the device which you made up at that time was generally the same as shown in the drawings of that patent as nearly as you can recall it?

A. As near as I can recall, yes. I know I experimented with the core on the outside of the socket as well as inside because I had considerable difficulty with the coils not being uniform, and I thought that the low temperature metal was the reason for that and I purchased some high temperature metal from the Chase Valve Company in Detroit. They had not been in that business so very long right at that time, but were making the product for a device of their own, as I understand.

Q. Is that the same firm that was mentioned here this morning when a young gentleman came on the stand and testified about the uses that bimetal product can be put to?

A. That's right.

Q. So you have known of that concern for a considerable period of time, is that it?

A. Oh, yes.

Q. What became of that first model which you made and which you said had that fiber bushing?

A. I would not know. When I left the company it was there in a box with a lot of other stuff, and I just don't know what became of it.

Q. Tell me, please, about when did you leave the company, meaning the Central Stamping Company?

A. Well, it was known as the Jessop Company at that time.

Q. Yes.

A. It was in the fall of 1928 because I went with Bowen Products in June of 1929.

Mr. Byrne: I ask that this paper be marked for identification Plaintiff's Exhibit 29.

(Said paper was so marked.)

[fol. 293] Q. The paper that I called to your attention a short while ago, and which is signed by you and which is dated August 9, 1927, has at the top, does it not, the name Cromwell, Greist & Warden?

A. That's right.

Mr. Byrne: And you gentlemen on the other side will concede with me that they are patent counsel engaged in the practice here in Chicago?

Mr. Wiles: Oh, yes. They are a well known Chicago firm.

Mr. Byrne: Yes, and have been for a long period of time?

Mr. Wiles: Yes.

By Mr. Byrne:

Q. Now, do you know the occasion for making out this paper, Exhibit 29 for identification?

A. Yes. Mr. Jessop brought that down to Detroit with him on one of his trips.

Q. Now, will you please read this paper with me and state whether the statements contained therein, those that were filled in by you and which are in your handwriting refresh your recollection now as to the statements contained therein. First, on this sheet, Exhibit 29 for identification——

Mr. Wiles: If the Court please, I still say that is utterly incompetent. Here is a self-serving declaration not admissible by itself at all by any possibility.

The Court: You have not exhausted the recollection of the witness?

Mr. Byrne: I believe so.

The Court: If this merely corroborates what he has specified it is not admissible. If it is something he does not [fol. 294] recall, and he has testified to all he can remember——

Mr. Byrne: Well, I asked him about when he made the statements. This is merely corroboration.

The Court: That is merely corroboration of his statement, for that purpose it is not admissible. If he had forgotten and could use it to refresh his recollection he might testify, but as long as he has testified to the same thing this is not admissible.

By Mr. Byrne:

Q. Can you tell me about when you made the first drawings of your invention, Mr. Mead?

A. The first drawings?

Q. Yes, or sketches, whatever they were.

A. It was in the early part of 1926.

Q. And can you tell me the nature of those drawings?

A. They were merely working sketches that I made up for my own purpose.

Q. As you worked on things mechanical did you make up sketches so that you would have them as a guide?

A. Oh, yes. That was absolutely necessary.

Q. Can you tell me about when your invention was disclosed to others? When you told anybody about it. When did you tell others about it?

A. I told Mr. Dunsmore and Mr. Head——

Mr. Wiles: I object to that form. He has to state——

The Court: I thought he had testified to conversations with Mr. Jessop.

Mr. Byrne: Yes.

The Court: And if that was the time of the disclosure, and if you want to date it, is that it?

[fol. 295] By Mr. Byrne:

Q. Can you tell me about the time you had your talk with Mr. Jessop, Mr. Johnson and Mr. Head about your invention when you told them about it?

A. Well, it was in the early, I would say around January of 1926.

Q. Yes. Now, Mr. Mead, you made up, you said, a model of your device by hand?

A. That's right.

Q. And that had fiber bushing in it, didn't it?

A. That's right.

Q. And that bushing you said—what happened to that?

A. Well, it charred and deteriorated.

Q. Do you know where that model or device is that you made up by hand and which had that fiber bushing?

A. I have not the slightest idea.

Q. Do you know about when you made that device?

A. That device was made in the year of—either made in the latter part of 1926 or the first part of 1927. I know it was cold weather when I was working on it, I know that.

Q. Well, now, at about what time was the business of the Central Stamping Company taken over by Mr. Jessop?

A. Well, that's quite a long and involved story.

Q. Can you give me the approximate time?

A. I can. He was financially interested in our company before he actually took the business over.

Q. Yes.

A. To the extent of financing us for tools and fixtures on various items that we were manufacturing for him.

Q. Yes.

A. And it was some time in 1927 that my partner, Mr. Dunsmore, advised Mr. Jessop that we could no longer carry on, so he suggested that he would purchase the assets of the company if we would stay on and run it. That was in 1927, the year of 1927.

Q. That's your recollection of it?

A. That's right.

[fol. 296] Q. Well, were any of your other devices made up after that time?

A. After what time?

Q. After the first model.

A. The lighter?

Q. Yes.

A. Oh, yes, yes, a number of them.

Q. You personally made up others after that time?

A. Oh, yes.

Q. Did you ultimately get into the manufacture of the device?

A. Yes, we did.

Q. Can you give me some indication of about the time when you got into manufacture?

A. I think it was the latter part of 1927.

Q. And at that time Mr. Jessop was in charge of the business, is that the fact?

A. That's right.

Q. And that manufacture was carried on at the plant that had formerly been occupied by the Central Stamping Company, is that right?

A. Correct.

Q. And it was then being carried on by the Jessop concern?

A. That's right.

Q. Who had charge of the sales of the device which you then made up for the market, that is to say, were they sold from Detroit?

A. We manufactured in Detroit only and shipped them to Chicago and maintained a warehouse here, and all sales were made at the Chicago office.

Q. And they were made by whom, if you please?

A. They were made by S. T. Jessop Company.

Q. I tender to you a paper, and will you please examine it and state whether or not you can identify it?

A. Yes. That is a trust mortgage.

Q. What is it, please?

A. A trust mortgage. Mr. Landy, I believe, was trustee under the mortgage.

Q. Were you familiar with the transaction which is covered by that paper which you have in your hand?

A. Yes, I was.

Q. You were interested in the Central Stamping Company at that time as a partner only?

A. Yes, that's right.

[fol. 297] Q. And did you know about the transaction?

A. I did.

Q. And what is represented by the paper which you have in your hand?

A. It is a trust mortgage. Mr. Landy was appointed trustee.

Q. For Central Stamping Company?

A. For Central Stamping Company, to administer their affairs, and I believe they decided on a sale, a trust mortgage sale.

Q. What is the date of that document, if it has a date?

A. January 14, 1927.

Q. Is there a date above that date?

A. The 27th of December. Oh, the 27th of December, 1926.

Q. The date of that paper is December 27, 1926?

A. Yes.

Q. Did you know of the transaction which culminated in this paper that I tender to you?

A. Yes.

Mr. Byrne: I ask this paper be marked for identification Plaintiff's Exhibit 30.

(Said paper was marked for identification.)

Q. Now, can you tell me by reference to this Exhibit 30 for identification, which you stated is dated December 27, 1926, whether or not you made your model, the one that is not now findable, before or after that date?

A. That's a working model which was made right after this date.

Q. Right after that date?

A. Right after this date.

Q. And do you know about how long after that?

A. I would say within three months.

Q. Had you been working on parts of it before this date of December 27, 1926?

A. Oh, yes.

Q. And on your sketches?

A. Well, I could not do much because I had to do it in my spare time.

Q. Maybe I misunderstood. How about your first crude model of it, the one that was replaced by the porcelain part [fol. 298] which had the fiber bushing on, was that the one made after this date, December 27, 1926?

A. It was made shortly after that date.

Q. I am tendering to you five sheets which contain written matter, and some sketches, and will ask you if you will examine them and state whether or not you can identify them.

A. Yes.

Q. Tell me, please, who did the writing which is contained thereon?

A. It is my handwriting.

Q. Please look at all of them.

A. These are my sketches. I don't know whose this is, in whose handwriting that is.

Q. You call my attention to the fact that a sheet on pink paper, on which two figures appear, are not in your handwriting?

A. Yes.

Q. I have withdrawn those.

A. This is mine. Yes, this is the description that I gave Mr. Jessop of the various details of the lighter for the patent attorney's information.

Q. And do you know about when you prepared the data which is contained on these six sheets?

A. I don't recall the exact date.

Q. Can you tell me approximately?

A. I imagine it was in 1927.

Q. Before the application was filed, do you suppose?

A. I imagine it must have been. That was for the patent attorney's information.

Q. And according to your best information now this data was prepared in the summer of 1927 before the application for patent was filed?

A. That's right.

Mr. Wiles: It has a date on it, has it not?

A. I think not.

Mr. Wiles: It is dated repeatedly.

[fol. 299] Mr. Byrnes: No, it is not.

Mr. Wiles: Two of them have a stamped date of August 7, 1927, on them.

The Court: Even though they bear dates I think the witness can testify to the actual date.

Mr. Wiles: Oh, yes.

The Court: Any date might be put on them.

Mr. Byrne: I offer in evidence the five sheets which the witness has testified contain descriptive matter and some sketches which he made in the summer of 1927, and ask that they be marked Plaintiff's Exhibit 31.

The Court: They may be admitted.

(The exhibit was so marked.)

By Mr. Byrne:

Q. Now, Mr. Mead, I think you testified that shortly after December 27, 1926, you made your first full sized model of your device, is that right?

A. That's right.

Q. Now, will you please turn to this paper to which we have referred, which is signed by you August 9, 1927, and to the statement contained therein in response to the question: "Was a full sized model made and if so, when?" and a date appears thereon April 30, 1926. Does that tend to refresh your recollection as to when you made your first model of this device?

Mr. Wiles: It seems to me that's objectionable and entirely improper. The witness when examined here before stated this work was done within three months following

the date of this sale, which was December 27, 1926, which would put it along to April, 1927.

The Court: Is not that the date?

[fol. 300] Mr. Huxley: This was written in 1927.

The Witness: It has been a long time ago and I have been away from the company and in fact away from that line of work for ten years.

Mr. Huxley: It seems to me it is perfectly proper to let the witness refresh his recollection from a paper written at that time.

The Court: Sometimes a witness is refreshed as to a date, and some writing may refresh his recollection as to the date.

Mr. Huxley: As to the true date.

Mr. Wiles: At the time it was made it was wholly serving, and long after.

The Court: The document is not admissible, but the witness' attention may be called to the document he has executed and made at a time nearer when his recollection might be better.

Mr. Huxley: That's all we ask.

A. I had forgotten about this until the last few months.

Mr. Byrne: Will you read my question, please?

(The question was read as follows: "Now, will you please turn to this paper to which we have referred, which is signed by you August 9, 1927, and to the statement contained therein in response to the question: 'Was a full sized model made and if so when,' and a date appears thereon April 30, 1926. Does that tend to refresh your recollection as to when you made your first model of this device?")

Mr. Huxley: Show him the memorandum.

A. Yes, it does.

Mr. Wiles: I want it clear that the witness is now testifying from his present recollection and not from what is on a paper but what he now remembers independently of any paper at all.

The Court: This is asked you, if this refreshes your recollection so you know not from what is stated here but from your refreshed recollection so you can state?

A. I was trying to recall some incident that would knit together a definite date there. I know that I mentioned to Mr. Jessop and to Mr. Johnson the fact that I had a device in mind, and they suggested that I get to work on it immediately. That was I know in very cold weather. It was around the first of the year, and I immediately started to work on it. Whether that was 1927 or 1926 or 1925 right now it would be very hard for me to say. I would have to go back and get some correspondence out to know just when I went to the Central Stamping Company, and the date that Jessop became financially interested in it, and the date on which I left, but I do recall this when Mr. Jessop asked me to fill this out for the patent attorney.

By Mr. Byrne:

Q. That is, you mean Exhibit 29 for identification?

A. That's correct. I remember filling that out, and I told him that I was going to put on the absolute actual date, if anything favor it to you.

Mr. Wiles: I object to that.

By Mr. Byrne:

Q. Does that paper, Exhibit 29, now refresh your recollection with respect to when you made your first model, or does it not?

A. It does. It must have been in 1926.

[fol. 302] By Mr. Wiles:

Q. Was that a conclusion or do you actually remember it now as being 1926?

A. Well, I remember it now as being 1926, yes.

Q. You did not remember that way when you began to testify. You remembered it as 1927.

A. I remember I made the device in 1927 it was.

By Mr. Byrne:

Q. Mr. Jessop I think you said took over the Central Stamping Company before December 27, 1926, which is the date of the paper, Exhibit 30, did you not?

A. Yes.

Q. He took it over at that time?

A. He took it over in December, 1926, according to that paper there.

Q. Well, according to the paper, but you said in fact he had taken it over, came to you before that time?

A. Yes, he had invested money in the company to the extent of buying tools and dies.

Q. The device was marketed after that time, was it not?

A. It was.

Q. Will you look at the sheet which I tender to you and state whether or not you can identify that?

A. Yes. I wrote the instructions.

Q. And what do the instructions relate to?

A. They relate to the operation and care and maintenance of the light.

Q. Of the lighter that you have devised, is that it?

A. That's right.

Q. Do you know about when that leaflet was put out?

A. Well, that must have been in the latter part of 1927.

Q. That's what you believe it to be anyway?

A. Yes.

Q. But it is a paper you had to deal with about that time and it does relate to the cigar lighter which you devised?

A. That's right.

[fol. 303] Mr. Byrne: I offer in evidence that paper last identified by the witness as Plaintiff's Exhibit 32.

The Court: It may be admitted.

(The exhibit was so marked.)

By Mr. Byrne:

Q. Have you here one of the devices which you did make up at some time or another?

A. Yes. That device right there is the first model that I made that I would care to submit to anybody.

Q. And is that a model which has been in your possession since it was made?

A. That's correct.

Q. And you got it out comparatively recently?

A. I took it home to keep for sentimental reasons. I had it laying around the house and last fall my wife was going to throw it out and I salvaged it.

Q. Tell me, is that a machine made device or a hand made device?

A. It is a machine made device, that is, the parts are machined.

Q. Yes.

A. But this knob is one that I afterwards put on after I got my Bakelite part made, but this part of the device here (pointing).

Q. When you say "this part of the device," please designate it so we will have a record that will mean something.

A. I don't know what you would call it. It is the mechanical part of the device was manufactured by hand.

Q. By that you mean the part which appears here in brass or copper?

A. That's correct. Every part in it was manufactured, machined by hand. In other words, I mean I did not have production tools.

Q. At the time you made this?

A. That's right.

Q. And this particular device has been in your possession ever since it was made?

A. That's right.

[fol. 304] Q. Can you give me an approximation of the time when you made this particular device?

A. It was a long time ago.

Q. It was a long time ago?

A. But that device there was one that was submitted to General Motors for their approval and Mr. Fisher and Harry Earl had a lot of fun playing with it, and that was back—I believe that was in the fall of 1927 that I made that device, that model there, rather.

Mr. Byrne: I offer in evidence the device identified by the witness and ask that it be marked Plaintiff's Exhibit 33.

The Court: It may be admitted.

(The exhibit was so marked.)

By Mr. Byrne:

Q. Mr. Mead, I am tendering to you some papers which have come to my attention, some of which are on the letter paper of Central Stamping Company, and I will ask you to examine particularly the first few sheets and state whether or not you are familiar with them and whether or not they help you in any way to fix the time when you made your first model.

(Sheets of paper handed to Mr. Wiles who examines same.)

Mr. Wiles: I cannot tell what this means.

A. These are invoices where we invoiced Mr. Jessop the tools I mentioned a short time ago where he financed the tools on this two-in-one button, which was a new device we were putting on the market at that time, and that gave us the necessary working capital to put the product out, incidentally under his trade-mark.

[fol. 305] By Mr. Byrne:

Q. You say you put out what product?

A. This two-in-one-horn button. That was in August, 1926.

By the Court:

Q. How is that related to this model?

A. Well, we manufactured a line of horn buttons and cheap accessories principally for the Model T Ford, as I had several ideas which were new at that time, but I did not have the finances to manufacture them, and I disclosed that to Mr. Jessop and he said he would furnish the necessary funds to do the job if we would give him exclusive sales rights.

By the Court:

Q. But what does that have to do with this model?

A. This cigar lighter, your Honor?

Q. Yes.

A. Well, it was at that time, it was in 1926 that Mr. Jessop became financially interested in the company to that point where I had confidence enough to disclose the cigar lighter to him.

By Mr. Byrne:

Q. Did you do so by that time?

A. I did.

Q. And "by that time" what time do you refer to?

A. It was prior to this.

Q. And "prior to this" means what?

A. August 6th here.

Q. What year?

A. 1926. He said, I remember now, that that would be the next item that we would manufacture, if we did. We concentrated our efforts on the cigar lighter.

[fol. 306] Q. And had you built a model by the date that you refer to, that is to say, does this paper tend to refresh your recollection as to whether you had your model by the date of August, 1926?

A. That was invoices for tools that had already been made.

Q. For what purpose?

A. For the two-in-one lighter.

Mr. Wiles: Two-in-one horn button you said.

The Witness: That's correct, but because the tools would have to be made before we could build them for them.

By the Court:

Q. Is the two-in-one button related to the lighter?

A. Only in so far as it refreshes my memory to the extent that we must have had the tools even by August for the two-in-one button, which would leave me available to work on the cigar lighter.

By Mr. Byrne:

Q. It does not give you when you had your tools ready for—

A. The cigar lighter?

Q. Yes, or even for your model?

A. I did not make any tools for the model.

Q. But you had tools you could make the lighter with, is that it?

A. Not until the following year.

Mr. Byrne: I ask that this bill be marked for identification, consisting of two sheets, Plaintiff's Exhibit 34.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Byrne: You may cross examine, Mr. Wiles.

[fol. 307] Cross-examination.

By Mr. Wiles:

Q. Now, I want to get just as clear as I can from this last testimony. Some time before August, 1926, not long

before, Jessop became interested in the company, is that right?

A. You said Jessop became interested in the company just before August, 1926?

Q. You said he financed these tools that are shown in the last exhibit.

A. Mr. Jessop was our sales representative, he was at the time that I went with the company as an employee, and that was in 1922 or 1923. Mr. Moyers owned the company at that time.

Q. Well, you said it was about the time of these last invoices that you looked at, August, 1926, that Jessop put some money in?

A. That's correct.

Q. And it was at that time that you got confidence enough in Jessop's interest in the business to tell him about this lighter, or just about that time?

A. Perhaps it would be better if I gave you a little more of the history of the company.

Q. I wonder if you can't answer my question. That's what I thought you said.

A. That's correct. I did say that.

Q. So it was about August, or a little before August of 1926 that you told Jessop about this?

A. No. It was the fore part of 1926.

Q. Well, I am trying to get at the hook-up of these last invoices that you looked at which you said refreshed your recollection?

A. That's so.

Q. As I understood the state of your memory then, it was that it was about the time that Jessop put his money in?

A. It was that time that he actually put the money in, although he agreed to put the money in before that time.

Q. Well, as I understood it was a short time before that he agreed to put some money in?

A. That's correct.

[fol. 308] Q. And it was after that agreement, that is just about August, or a little bit before, that you told Jessop about the new idea on the lighter?

A. Yes. It was before August that I told him about the lighter.

Q. Well, not very long before.

A. It was in cold weather I told him. I remember very well coming back from the restaurant across the street and it was very very cold, Mr. Johnson, Mr. Jessop and myself.

Q. You put it much earlier in 1926 than August that you told Jessop about it?

A. Yes, I did tell him about it earlier than August, 1926.

Q. Now, before you came here to testify you went all over this with Mr. Huxley and Mr. Byrne, didn't you, to refresh your recollection as well as you could?

A. Not to any great extent. I did not know anything about the case until a week ago.

Q. But I mean after you came here you consulted them about it and talked about what your testimony was going to be, didn't you?

A. They merely asked me to look at some of the papers and see if I recollected any of them, and the date.

Q. Yes. And they asked you to produce these papers, didn't they?

A. What papers?

Q. Didn't you have anything to do with the producing of these papers?

A. I did not have any of these papers.

Q. They had them when you came here?

A. That's right.

Q. Well now, this bill of sale by the trustee was gone over by you before you came here, was it not?

A. I merely scanned it over night before last I believe it was.

Q. You looked that over and talked to Mr. Byrne about it, didn't you?

A. He asked me if I knew about it and I said I did.

Q. And you came here prepared to testify, did you not, that that did assist in fixing your recollection?

[fol. 309] A. Well, I have been trying to set the definite dates, and it does help me to recall the definite dates, yes.

Q. But when this sheet was produced, which is Exhibit 30, and you looked at it and said that it did refresh your recollection, and you then said that the first model was made within three months after that date, didn't you?

A. I believe I did; yes.

Q. And that was then your best recollection, was it not? When you testified to it you testified, of course, according to your best judgment at the time, didn't you?

A. Yes.

Q. And you also told Mr. Byrne that when you went over this bill of sale with him, didn't you, the other night?

A. Perhaps I did, I don't recall whether I did.

Q. Well, it had something to do with your memory at that time. That's why Mr. Byrne brought it here, was it not, that you had told him it helped you refresh your recollection?

A. I assume so; yes.

Q. And you told him what you have said here about it, didn't you?

A. Yes.

Q. Of course, when you told him a couple of days ago, the other night—whenever it was, you then thought you were telling him just as far as you were able to remember, didn't you?

A. I did.

Q. Certainly. Now, on this matter of commercial manufacture, for how long a time was this on the market?

A. I left the company in the fall of 1928, I know that definitely, and they were manufacturing them after I left. How long I don't know.

Q. Not very long?

A. I don't imagine so, but I started the job in production and sent away the first or second shipments, I recall that.

Q. Shipments of how many?

A. I cannot tell you the exact quantity. We shipped them to Chicago.

Q. Well, a few hundred or a few thousand or a few [fol. 310] score?

A. I imagine it was in the neighborhood of, possibly, a total of four or five hundred.

Q. So far as you know that's all that were ever sold?

A. No. In talking to my partner after that Mr. Head advised me that they sold quite a quantity of them.

Q. What do you mean by "quite a quantity"?

A. He mentioned that they sold a thousand because they had purchased one lot of a thousand Bakelite knobs, and they were entirely used up.

Q. And at some time or other, not very long after you left the thing failed, didn't it, as a commercial proposition?

A. I don't know what happened. I know they went out of business.

Q. They did go out of business?

A. Yes.

Q. Not very long after you left?

A. Within a year I imagine.

Q. And nobody revived this lighter for years?

A. I lost all track of it.

Q. You have never seen one on the market aside from the thousand or so that were made in the beginning?

A. No.

Q. And you never heard of one having been made later?

A. Well, outside of the following year what few there were.

Q. Yes. Now, as to the date when this actual commercial manufacture began, I think you stated 1927, late 1927?

A. I believe that is correct; yes.

Q. Now, I notice there are directions here on this Exhibit 32, and by the way it was in connection with Exhibit 32 that you fixed the date of publication as 1927, was it not?

A. What is Exhibit 32?

Q. That's the direction sheet.

A. That has no date on it.

Q. I know, but you said that must have been in 1927, did you not?

A. Yes.

[fol. 311] Q. Well now, that contains directions for installing on the model A Ford, does it not?

A. I don't know whether it specifies model A or all models.

Q. Well, look at it.

A. (Witness examines document.) We made two different models at that time, a clamp on model and this model here.

Q. You are not answering my question.

A. I was leading up to it, or trying.

Q. The sheet, Exhibit 32, does contain directions for installing on the model A Ford, does it not?

A. That's right.

Q. You know as a matter of fact that the model A Ford didn't come out until 1928, don't you? Is not that

your impression? I am frank to say I am giving it from recollection.

A. I don't know I am sure just what year the model A did come out.

Q. What makes you say that this particular Exhibit 32 must have been published in 1927?

A. Because I left the company in 1928.

Q. What time of the year?

A. I believe it was in September.

Q. Of 1928?

A. That's right.

Q. Well, this might have been published then any time up to September, 1928, might it not?

A. I was positive that I wrote the instructions myself.

Q. Well, you could have written them any time prior to September, 1928, could you not?

A. Yes, but we were in production on the model for a year before I left the company.

Q. What I was getting at was, the thing you testified about positively was that this particular sheet was published in 1927?

A. Well, obviously you make your instruction sheet as soon as you have made your first product.

Q. Was that the only instructions you ever published?
[fol. 312] A. No. There was instructions on the box.

Q. I mean did you have any other edition? Did you have an edition that did not contain these directions for installing on the model A Ford?

A. What was that?

Q. Did you have an edition or issue of these direction sheets that did not have the model A directions on it?

A. I am not sure unless it was instructions on the carton.

Mr. Wiles: I believe that is all.

The Court: Any redirect?

Mr. Byrne: Just one question, your Honor, please.

Redirect examination.

By Mr. Byrne:

Q. Have you any connection with the plaintiff company in this suit, the Automatic Device Company?

A. No, I have not.

ADAM JOHN DUNSMORE, called as a witness on behalf of the plaintiff, having been first duly sworn, testified in rebuttal as follows:

Direct examination.

By Mr. Byrne:

Q. Will you please give your full name, Mr. Dunsmore?

A. Adam John Dunsmore.

Q. Where do you reside?

A. The Carleton Hotel in Oak Park.

Q. Chicago, Illinois?

A. No, Oak Park. That is a suburb west.

Q. Are you employed by a Chicago organization?

A. Chicago Rivet & Machine Company.

Q. For how long a period of time have you been employed by that concern?

A. Ten years, in round figures.

Q. What is the nature of the business that is carried on by that organization?

[fol. 313] A. Manufacture of tubular and split rivets and automatic setting machines pertaining to the use of those rivets.

Q. Were you ever employed by Central Stamping Company in Detroit, or did you have any connection with that organization?

A. It is a little difficult to define as employed. Actually, the business was originally owned by a man named Moyers. Mr. Mead was superintendent. Subsequently Mr. Mead and another man named A. J. Head took over the business. It was discovered it was in very, very bad condition financially, and they asked me to come in in an effort to pull it out. So that I was not actually a partner in the business at that stage. I was only contributing whatever knowledge or skill I might have in sales, and so forth, in an effort to pull the thing out for these two men.

Q. Can you tell me about when you took up this association with Central Stamping Company?

A. It is a little difficult to put my finger on that. I would say probably somewhere in 1925.

Q. In the year 1925?

A. I imagine along about late 1925, but that is merely a guess.

Q. For how long a period of time did you remain with this organization?

A. Well, I was there until it was finally sold under a trust mortgage.

Q. Will you please examine the paper which I tender to you, which has been marked Plaintiff's Exhibit 30 for identification, and state whether or not you know what that paper is?

A. I presume this records the sale of the assets of the company to Mr. Jessop.

Q. Will you please look at the last page of that?

A. Do you mean the signatures?

Q. Yes. Does that refresh your recollection? I mean, after having looked the whole through, is that a culmination of the sale or transfer to Jessop about which you have spoken?

[fol. 314] A. That is correct. I arranged for this trust mortgage. When the company seemed to have reached the end of its rope I arranged the trust mortgage, and I think I even recall Mr. Lantry's signature.

Q. At any rate, you know of the association of Mr. Lantry with this enterprise at that time?

A. Yes.

Q. As trustee?

A. Yes, correct.

Mr. Byrne: I offer in evidence that document which was formerly marked Plaintiff's Exhibit 30 for identification.

The Court: It will be admitted.

(The exhibit was so marked.)

By Mr. Byrne:

Q. Now, you mentioned Mr. Mead connected with the Central Stamping Company. Do you refer to the Mr. Mead who was on the witness stand just before you?

A. The previous witness, yes.

Q. While with the Central Stamping Company were you familiar with whatever was made there?

A. Very, very much.

Q. You sold some of the products, did you not?

A. I think I directly—that is, I was responsible for the sale of it all through its manufacturers' agents, of whom Mr. Jessop is referred to as one.

Q. Mr. Jessop, at that time of Chicago?

A. Correct.

Q. Did you ever know anything about a cigar lighter which was developed by Mr. Mead?

A. Yes.

Q. Did you see him engage in the making of one of the models or one of the devices?

A. I not only saw him engaged in the making of one of them, but I saw him engaged in the making of a number of consecutive models, and I probably held a few of the parts for him at the time.

Q. In other words, you collaborated with him in whatever he was attempting to do in that connection?

[fol. 315] A. Well, mechanics is not my forte. I am more concerned with sales, and the same was true at that time.

Q. Can you give me a general description of the device which you worked on with Mr. Mead?

A. I couldn't give you a technical description.

Q. I want just a general description of it.

A. I heard, of course, Mr. Mead's testimony, and substantially, you know, that is my recollection of it. He started off with a piece of fiber and a cup, and he had a square member running through which he engaged in a hook on the end of this thermostatic metal. That is about it. I really don't know.

Q. Would you say a thermostatic metal was used in that device?

A. Yes. I had to go out and find it for him, I think, or at least I probably did some phoning, whatever it was.

Q. Was a device made up while you were there with the company?

A. Let me say first, please, that I also remained there after the property was sold to the S. T. Jessop Company. I also remained there for a period of months after that, as a matter of fact a year, representing S. T. Jessop Company not only in the products of this activity with which I have been identified but also other items which Mr. Jessop was also representative for. I covered Michigan, Ohio and Indiana. For a period of a few months after Mr. Jessop acquired the property I handled most of the office routine between Detroit and Chicago, as well as making the outside calls, so that I hope in that way to give you the answer to my being identified prior to and after his acquiring the property.

Q. Can you, with respect to the time that Mr. Jessop took over the company, the Central Stamping Company, state whether or not a model of Mr. Mead's device was made by that time, so far as you know?

A. May I correctly understand that? Do you mean, did he make a model prior to Jessop's acquiring the property under sale?

[fol. 316] Q. That is right.

A. To the best of my belief he made the model. That probably was some time prior to that. I could not be specific on dates. I have no data. Some time previous, I would say, he monkeyed with the thing, maybe, arbitrarily, five or six months.

Q. That was probably five or six months before the time of the sale to Mr. Jessop?

A. That is correct. That is when he was just playing with it.

Q. After Mr. Jessop took possession of that organization by this document of December 27, 1926, you remained there for a considerable period, as you stated?

A. Yes, as a sales representative, and only contributing sort of a contact in an office way.

Q. Were you there at a time when they began manufacturing one of these Mead cigar lighters?

A. In a capacity, yes; outside representative.

Q. You knew that they did eventually get one of the devices upon the market?

A. Oh, yes, yes.

Q. Do you know why they discontinued? Were you there at the time they discontinued the manufacture of this cigar lighter?

A. No. They were still, as far as I recall, making it at the time I entered the employ of my present connection.

Q. When you entered your present connection, or rather when you left that old association down in Detroit, was it a strong concern financially or was it comparatively weak?

A. Humorously weak.

Q. Humorously weak?

A. Yes.

Q. It did cost money at that time to carry on the manufacture, did it?

A. Correct.

Q. Did you see whether or not the device, which you believe was made before the sale to Mr. Jessop in Decem-

ber, which is evidenced by this paper of December 27, 1926, worked satisfactorily? That is to say, did it operate?

A. Well, it operated. There was something remaining to be done, I would say in the heat-treating, as I recall the [fol. 317] story, of the thermostatic metal. I personally presented this model and the battery and stand that Mr. Mead referred to, myself, to the Fisher Body Company. There were a number of models prior to that.

Q. That was Exhibit 33?

A. Yes, that is the one I toted around.

Q. You took that to Fisher Body Company?

A. Fisher Body Company.

Q. In Detroit?

A. In Detroit.

Q. Did you operate that device for the Fisher Body people?

A. Yes, but as I say, because of a seeming variation due to the fact that the thermostatic springs, as Mr. Mead had explained it to me at the time, because of being hand made, had a certain variation, it might run five hundred times and operate perfectly, and about the time I got it up to Mr. Fisher, or somebody, that was the time it would not repeat quickly enough.

Q. In other words, it was a little slow in operating?

A. Well, after it had been used repeatedly a number of times. These gentlemen, of course, are impatient and they would sit there and play with it a while and it might not work. It did not seem to have a tendency to cool.

Q. But, given a chance, it would? It just would not snap right back?

A. Given a chance, it would work without any trouble.

Q. Do you remember about the time you took it to the Fisher people? Was it after Mr. Jessop took over the concern?

A. Yes.

Q. Do you know approximately when it was you took it to the Fisher concern?

A. As a guess, probably along the summer or fall of that first year he had control, which, I believe, was 1927.

Mr. Byrne: That is all.

Mr. Wiles: No cross-examination.

[fol. 318] GEORGE W. JOHNSON, called as a witness on behalf of the plaintiff, having been first duly sworn, testified in rebuttal as follows:

Direct examination.

By Mr. Byrne:

Q. Will you please state your full name, Mr. Johnson?

A. My name is George W. Johnson.

Q. Where do you live?

A. At 5809 North Kilbourn Avenue, in Chicago.

Q. With what concern are you associated or a part?

A. I am in the United States Tent & Awning Company.

Q. What is the nature of the business of that concern?

A. Well, we are exposition, circus and carnival outfitters.

Q. You make some tents for that purpose?

A. Yes, indeed.

Q. Is Mr. S. T. Jessop associated with that company?

A. He is the president of the United States Tent & Awning Company.

Q. What is your office?

A. I am the vice president of the company.

Q. How long have you been in your present association with the company and with Mr. Jessop?

A. The United States Tent & Awning Company since January 2, 1930.

Q. Prior to that time were you associated with Mr. Jessop?

A. Yes, for a number of years prior to that time.

Q. What was the nature of the business that was carried on prior to that time by Mr. Jessop and you?

A. We were manufacturers' representatives, particularly in the automotive accessory line.

Q. Were you operating principally here in Chicago?

A. We maintained an office in Chicago at 219 West Chicago Avenue, and a warehouse.

[fol. 319] Q. Do you know Mr. Mead who was on the witness stand here this afternoon?

A. I know Mr. Mead.

Q. In what connection did you meet Mr. Mead?

A. In connection with a visit to the Central Stamping Company some time in 1925 or 1926.

Q. The Central Stamping Company to which you refer was located in what city, please?

A. They were located in Detroit, Michigan.

Q. What was that concern doing and what association did it have, if any, with Mr. Jessop at that time?

A. Mr. Jessop at that time represented them. He was a sales agent for the Central Stamping Company, who produced automobile accessories.

Q. What if anything do you recall regarding a cigar lighter that the Central Stamping Company was working upon at about that time, or at any time?

A. At any time?

Q. Yes. I mean a thermostatic lighter, if they had one.

A. Well, I have a recollection of the S. T. Jessop Company manufacturing it. I have a recollection of my having sold some of them.

Q. Yes. Well, did you have any contact with Mr. Mead or anyone else down at the place of the Central Stamping Company at Detroit with respect to this device?

A. Yes. Yes, definitely.

Q. Well, now, did Mr. Jessop at any time take over the Central Stamping Company?

A. He did, sir.

Q. Can you identify the paper which has been marked Plaintiff's Exhibit 30?

A. I do, sir.

Q. Were you familiar with that at that time?

A. I was, sir.

Q. Pursuant to that paper did Mr. Jessop take over the assets of the Central Stamping Company?

A. I didn't get the question.

Q. I say, under that paper did Mr. Jessop take over [101.320] the assets of the Central Stamping Company?

A. He did, sir.

Q. Now, was it prior to the execution and delivery of that paper, Plaintiff's Exhibit 30, that you learned about this cigar lighter from Mr. Mead or others at the Central Stamping Company?

A. Oh, definitely prior to that.

Q. Will you tell me, please, what you knew about the device prior to that time, which is December 27, 1926?

A. I recall a number of models that I might see in my monthly visits to Detroit, at the Central Stamping Com-

pany. As I would make my monthly visits, in the interest of getting merchandise out of there so that we might deliver the goods that we had sold from time to time, Mead would show me the developments as he was playing around with the various parts and pieces he had around there.

Q. Did you see at that time that device or part of a device (indicating), and by that I am referring to this cigar lighter?

A. Well, I have a recollection of Mr. Mead's work bench, and like all inventors' personal benches it was cluttered up with a lot of wires and gadgets and knobs and brass parts, and a storage battery, and the like, and some heating elements.

Q. Did you see a completed device or a partly completed device? That is, did you see a cigar lighter on Mr. Mead's bench while you were at Central Stamping Company, at Detroit, at any time prior to December 27, 1926?

A. Yes, I did.

Q. What was the state or condition of that device? That is to say, was it completed or partially completed, or what?

A. I wouldn't say—it was not a completed device, in that it was nothing that you might offer as a piece of merchandise for sale.

Q. Well, what was it, a hand made device or what?

[fol. 321] Mr. Wiles: Let him testify to it. Just ask him to describe it.

Mr. Byrne: Don't worry.

The Witness: I didn't get the question.

The Court: Go ahead.

By Mr. Byrne:

Q. I will ask it again. Will you tell me what the condition of that device was? How was it made, so far as you know?

A. I couldn't describe that to you, other than Mead's and Head's explanation as to how it worked.

Q. Did you see it operated?

A. I did operate it.

Q. You did operate it. Did the unit heat up so that you could light a cigar or cigarette with it?

Mr. Wiles: I object to that kind of examination.

The Court: Describe it.

The Witness: The device was a heating element on the end of a plug, and you turned it in a clockwise manner and it remained in that position, and later there was a snapping noise and it apparently moved. The lighting device or the heating element was incandescent, and you could light a cigarette with it or char a piece of paper with it.

By Mr. Byrne:

Q. After this period of December 27, 1936, did you have to do with the sale of this device?

A. I did, sir.

Q. Will you please look at the paper which has been marked Exhibit 32 and state whether or not you know what it is?

Q. Without reading it word for word it is an instruction for the installation of an Automatch lighter.

[fol. 322] Q. Was that used in connection with the sale of this device?

A. This was inserted in the container in which the device was packaged.

Q. Can you tell me whether or not this is a package in which the lighter was packaged?

A. Yes, that is definite. That is correct, and I know where it was made. It was made by the Randolph Box & Label Company in Chicago.

Mr. Byrne: I offer in evidence the package, the carton, identified by the witness, and ask that it be marked Plaintiff's Exhibit 35.

The Court: It may be received.

(The exhibit was so marked.)

By Mr. Byrne:

Q. Now, did you succeed in making any sales on the cigar lighter to, say, Montgomery Ward & Company?

A. Yes, sir.

Q. Was this lighter carried in the catalog of Montgomery Ward & Company, do you know?

A. Yes. It was assigned a stock number. I think that the automobile division or part of Montgomery Ward is

division 61, and the preface number would be 61- something or other.

Q. Will you please turn to this photostatic copy of a page from the Montgomery Ward & Company catalog, page 653, and state whether or not this cigar lighter is illustrated there and referred to?

A. Yes, it is. It is item 6106731. That is Ward's catalog number.

Q. Will you please glance at that page, 653, and particularly with respect to the written matter under the cut of this device, and state whether or not it is indicated that it is for a Ford automobile?

The Court: I think I can see that, without his testimony. [fol. 323] Mr. Byrne: All right, your Honor. Have you any objection to my offering a photostatic copy?

Mr. Huxley: No. That is covered by stipulation.

Mr. Byrne: I offer in evidence the front page and page 653 of the Montgomery Ward & Company catalog No. 109, covering the period for the fall and winter 1928 and 1929, with the consent of my good friends on the other side.

Mr. Schroeder: That is Plaintiff's Exhibit 36.

The Court: It may be admitted.

(The exhibit was so marked.)

By Mr. Byrne:

Q. Now, will you please examine cursorily, if any examination is required, the device which I tender to you, and state where that has been?

A. That has been in the office, or rather the personal safe of Mr. Jessop.

Q. Have you seen it there from time to time?

A. I have from time to time. He and I, I should say, share that fire safe jointly, and this has been in his possession all that time at 701 North Sangamon Street in Chicago. That is, since 1930.

Q. You have seen it there from time to time?

A. I have.

Q. What was the purpose of having it made up in this fashion, mounted like this?

A. My recollection is that it was one of the first models, one of the first working models that Mead turned out, and he wanted to make a desk set of it, and an ashtray device and lighter.

Q. At any rate, this particular device has been in your office here in Chicago for a large number of years? Since about when?

A. It has been at the Sangamon Street address since 1930, and prior to that at 219 West Chicago Avenue.

[fol. 324] Q. That dates back to, did you say 1931, or earlier?

A. No. We occupied the premises at 219 West Chicago Avenue up to January, 1930.

Q. Can you give me an approximation of about the number of the devices exemplified by these devices which are here as exhibits, which were sold by your company?

A. Only approximate.

Q. Can you give me an approximation?

A. Possibly fifteen hundred or two thousand.

Q. Do you know why Mr. Jessop discontinued the manufacture of the device?

A. Yes, I can explain that to you, probably at a little length.

Q. Well, all right.

A. The previous testimony which I have heard here is correct, and that is that it was a struggling company. Let me explain that the S. T. Jessop Company as manufacturers' agents, represented a number of manufacturers in the automotive line, among them being the Central Stamping Company, and the Central Stamping Company got into difficulties. We had some of the products of Central Stamping Company cataloged with such concerns as the Western Auto Supply Company, Montgomery Ward, and Guarantee Tire & Rubber Company, and when the Central Stamping Company failed to deliver the goods that we had sold, it was up to the sales representatives to protect our good name with the customers, inasmuch as we were selling them other products. That was the reason for Mr. Jessop's putting money into the company, primarily to satisfy and to fill orders that he had sold in good faith, and then later buying the company outright.

Having been sales agent for a number of years in the automotive line, and the automotive line going through a series of growing pains, where we would be rich one year and thin the next, we were looking for a different type of business, a business with more stability and some- [fol. 325] thing where we were directly concerned with the manufacture of articles. That is the reason he and I ac-

quired the United States Tent & Awning Company, which is a rather large company. We couldn't give any more of our time to this Jesco Products Company and what was left of the old Central Stamping Company, so we decided that we would get rid of it. In other words, that company that we became interested in was so much greater and larger that we thought we could not devote our time to both, and we just sold out.

Q. When Mr. Jessop took over the Central Stamping Company the name under which they carried on the manufacture down there was changed?

A. Yes.

Q. To what, please? Jesco Products Company?

A. It was the Jesco Products Manufacturing Company.

Q. Now, just to satisfy myself on one point before I stop, I believe you have testified that it was before December 27, 1926, that you had contact with Mr. Mead there in Detroit?

A. Yes, sir.

Q. And that you knew about his device before that time?

A. Yes, sir.

Q. And that you operated one of his devices on his work bench before that time?

A. Correct.

Mr. Byrne: I offer in evidence the lighter which the witness testified has been at his office for a considerable period of time, and will ask that it be marked Plaintiff's Exhibit 37.

The Court: It will be admitted.

(The exhibit was so marked.)

Mr. Byrne: That is all.

Cross-examination.

By Mr. Wiles:

Q. Are you able to say that this device came on the market earlier than 1928?

A. I don't believe so, no. No, sir.

[fol. 326] Q. Mr. Mead testified that that direction slip, I believe it is Exhibit 32, this thing (indicating), was published in 1927. Now, that could not have been until 1928, could it?

A. I don't believe so. I don't believe so, no, sir, for the reason that the printing was handled out of the Chicago office and then we shipped to Detroit and they were packaged over there.

Q. Isn't it your recollection that the Model A Ford did not come out until that year, 1928?

A. Well, I have a recollection of getting thin waiting for Ford to bring out a new model, and that directly affected our business over there. As to the year, I am not definite, sir, whether it was 1927 or 1928. But among the other items we manufactured were contrivances and accessories for the Ford car, and the Ford Motor Company was shut down for possibly a period of six months, or possibly a year, before they got into production on the new car. I am not definite as to what year, sir.

Q. This Montgomery Ward catalog is the winter of 1928-1929. Did you get a cataloging by them about as early as it came out?

A. I beg your pardon?

Q. Did you get Montgomery Ward to take it up about as soon as it came out?

A. To accept it and list it, sir?

Q. Yes.

A. I don't believe so. All of my experience in selling Montgomery Ward is that the devices are submitted to some department for approval and for testing, and on other items it has been a period of possibly a year or a year and a half or two years before we are able to sell them. I refer now to that horn button device and that two-in-one button.

Q. Well, if that was catalog-ed in the fall of 1928 they must have had it about the spring of 1928 to go over it.

A. I would say yes, they would need at least six months to work on it in order to get it in the book.

Q. So they must have started investigation very quickly [fol. 327] after you began to manufacture it?

A. Very likely, yes. It would be the first source we would go to to try to get a volume sale.

Q. Now, when this Jesco Products—let me put it this way. You decided it was better to liquidate that company and devote yourself to something else, is that correct?

A. That is correct. There was not sufficient income from the business to warrant our neglecting the affairs of the United States Tent & Awning Company. In short, we

could not be both in Chicago and Detroit, so we decided to sell and we just sold all of the machinery and equipment and disposed of the business. We did carry, however, in Chicago stock some of the items that we had manufactured, and shipped them to the various accounts until such time as the stocks were exhausted.

Q. The people who bought on your liquidation did not want to go ahead with this manufacture?

A. The liquidation was in the form of merely disposing of the machinery to an individual who, I believe, took it to Wichita, Kansas, and installed it in a factory down there, the various lathes.

Q. For making something else?

A. Making something else, yes.

Q. There was not a sufficient sale of this thing to justify somebody else in wanting to go ahead with it as a business?

A. I beg your pardon?

Q. There was not any such sale of this Mead lighter as would justify anybody else wanting to go ahead with it as a business?

A. Well, that is hard to answer. This all happened in 1930 and everything was tumbling around our heads, and there was a condition at that time where nobody knew what the market would be and nobody knew what the future would hold. Our decision to dispose of that Detroit plant was caused by what happened in the fall of 1929 when the market crashed, and at that time we thought we would [fol. 328] get rid of the thing. So, to answer the question as to the sale, I have reason to believe that had the item been properly advertised and displayed, and had money been spent on sales promotion, the item would have continued to sell.

Q. Well, you had real good business for the first year that you had this?

A. I wouldn't say good business from the standpoint of the volume.

Q. Well, I mean business conditions were good up to the fall of 1929. The biggest boom we had was on from the fall of 1928 to the fall of 1929.

A. Excepting, sir, let me enumerate the items that we made in Detroit; namely, a horn button that was for the Ford automobile Model T, a two-in-one horn button which

was made for the Model T, ash-trays which were made for the Ford car. Then Mr. Ford in 1927 or 1928, I don't know, decided to discontinue the manufacture of that Model T, and as a consequence the market and the demand fell off for these specialties that we were making for that Model T Ford.

Q. I understand, that naturally would, but this cigar lighter thing had nothing to do with the Ford Model T, particularly? It would go on any car, wouldn't it?

A. To answer your question, there was not sufficient volume at the time on the lighter to warrant our continuing to put more money in that Detroit thing.

Q. That would have been true for anybody. The volume was not there then.

The Court: I think that is argument.

Mr. Wiles: I am asking him. He knows the sales.

The Court: He says there was not sufficient for him. I don't know how he can answer for any body else.

Mr. Wiles: All right, that is all.

Mr. Byrne: I have one question.

[fol. 329] Re-direct examination.

By Mr. Byrne:

Q. Mr. Johnson, have you any connection with the plaintiff company in this case, the Automatic Devices Corporation?

A. No, I have no connection.

Q. Where is Mr. Jessop today, if you know?

A. Mr. Jessop is at his home.

Q. He is ill, is he not, today?

A. Yes.

Q. Probably will be available tomorrow morning?

A. I spoke to his wife this noon. She said very likely he would be at his office tomorrow.

Q. Have you any connection with the Casco Products Corporation?

A. None whatsoever.

Mr. Byrne: That is all.

I would like to ask Mr. Mead one question. That may be done, with your Honor's permission, from where he is.

HERBERT E. MEAD, resumed the stand for further examination:

Direct examination.

By Mr. Byrne:

Q. Mr. Mead, where is Mr. A. J. Head now?

A. He is home ill.

Q. He has been ill for a considerable period of time, five or six weeks?

A. No, he has not been down to work for about eight weeks.

Q. He has not been to work for about eight weeks?

A. That is right. He had a very bad bronchial condition.

Q. A bad bronchial condition?

A. That is right.

Q. He was at home when you left to come up here?

A. That is right.

Mr. Byrne: That is all. Thank you.

[fol. 330] We desire to call Mr. Jessop, if we can. He is lying home ill, but he will be very short in the morning. I think we have two witnesses who will be very short after that.

The Court: You cannot use them this afternoon?

Mr. Byrne: I don't know. Maybe we can.

Mr. Huxley: May I confer with counsel for a moment?

The Court: Yes, I will want to adjourn promptly at five o'clock.

(Whereupon a recess was taken.)

The Court: You were speaking about Mr. Jessop. I was wondering, if it is merely corroborative and is not going to be controverted——

Mr. Wiles: I don't know what he will testify to. Mr. Byrne, can you say what Mr. Jessop will testify to? Maybe we can stipulate.

The Court: If it is merely corroborative, if it is not going to be controverted, the original testimony is in.

Mr. Byrne: This is off the record.

(A discussion was had off the record.)

Mr. Wiles: I think you better call him.

Mr. Byrne: It will be very, very short.

[fol. 331] IN THE DISTRICT COURT OF THE UNITED STATES,
FOR THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

In Equity. No. 16,188

THE AUTOMATIC DEVICES CORPORATION, Plaintiff,

vs.

SINKO TOOL AND MANUFACTURING COMPANY, Defendant

Deposition taken on behalf of the plaintiff, pursuant to order of court, at 5733 Kenmore Avenue, Chicago, Illinois, on Thursday, March 23, 1939, at 3:00 o'clock p. m., before Alice M. Rankin, a Notary Public in and for Cook County, Illinois.

Present: Thomas J. Byrne, Esquire, representing the plaintiff; Russell Wiles, Esquire, and Bernard A. Schroeder, Esquire, representing the defendant.

Whereupon the following proceedings were had:

SIDNEY THOMAS JESSOP, called as a witness on behalf of the plaintiff, having been first duly sworn, testified as follows:

Direct examination.

By Mr. Byrne:

Q. 1. Will you please give your full name?

A. Sidney Thomas Jessop.

[fol. 332] Q. 2. Where do you reside?

A. No. 5733 Kenmore Avenue.

Q. 3. Chicago, Illinois?

A. Chicago, Illinois, County of Cook.

Q. 4. Are you in business at Chicago?

A. I am.

Q. 5. What is your business?

A. I am president of the United States Tent & Awning Company.

Q. 6. Where is your place of business located?

A. 701 North Sangamon Street, Chicago, Illinois.

Q. 7. Did you ever have any dealings or control or ownership of Central Stamping Company, of Detroit, Michigan, and if so, please state what it was.

A. Central Stamping Company was a predecessor of the Company which I bought at a trustee's sale in 1926. I believe there is a certificate of the original trustee's bill of sale which is an exhibit here.

Q. 8. Will you please look at the paper which I now tender you, and state whether or not that is the paper to which you referred?

A. Yes.

Q. 9. The paper which I now tender you is one that was heretofore marked Plaintiff's Exhibit 30. Is that document dated?

A. This document I had in my possession, in my private safe, and has been there ever since the date of the sale, ever since the sale was made, this and others. It is dated the 27th of December, 1926.

Q. 10. Pursuant to that bill of sale you acquired the effects of that company, Central Stamping Company?

A. That is correct.

Q. 11. Did you carry on the business of Central Stamping Company after December 27, 1926?

A. Only for a few days, and changed it over to the Jesco Products Manufacturing Company, that being a trade name we had on certain products we were making or having made to sell in the automotive field.

Q. 12. Did you know a man by the name of Herbert E. [fol. 333] Mead while you were associated with the Central Stamping Company?

A. I did.

Q. 13. By the way, prior to December 27, 1926, had you had contact with the Central Stamping Company?

A. Many times.

Q. 14. What was the nature of that contact?

A. They were manufacturing items for us, in fact, they were items that were listed in certain catalogues and which we were bound in duty to deliver, such as the two-in-one horn button and other items. They made the tools and dies for us, the Central Stamping Company, and then continued to manufacture these items for us.

Q. 15. Did you have a business at Chicago at this early time prior to December 27, 1926?

A. In Chicago, yes, sir; S. T. Jessop Company.

Q. 16. What was the nature of the business conducted by this company?

A. Manufacturer, as well as agent, for the automotive field.

Q. 17. Did you ever have any contact or learn about a cigar lighter that Mr. Mead worked on?

A. Yes, sir.

Q. 18. Will you please state in your own way what you know about that?

A. Well, in the course of manufacturing these items it required our making trips to Detroit several times and on one of those particular trips the subject of the cigar lighter was broached by Mr. Mead to the effect of, how would we like to have a lighter that would snap on and off automatically, so that one would not have to press the lighter on the dash into contact and would still leave his hands free on the wheel? I at that time did not believe anything like that could happen, but Mr. Mead seemed so serious in his contention that it could be made, we told him to go ahead and make one and let us see the model.

Q. 19. Did you see the model?

A. Later, about two months later, he did have a model, [fol. 334] sir. I went over to Detroit about two months later, saw him working on a model, saw him cutting off pieces of brass tubing, and asked him what that was. He said it was to make a socket with, or a plug to insert in the socket. He at that time had a model connected up to an old storage battery on a bench, and at that time I did see the thing snap on and off automatically and saw him light a cigarette from that particular model.

Q. 20. Did you have to remove a part in order to get your light?

A. You did. He turned the thing in his hand and had a watch or an old clock standing on the bench and said, "Now, Sid, if you will wait a minute, or half a minute, you will see that thing snap off." I saw the thing snap off and he took it out of the socket and lighted his cigarette with it.

Q. 21. Did you ever light a cigarette with it?

A. No, because I do not smoke.

Q. 22. Can you tell us approximately when it was you saw this model that you have described?

A. Yes; it must have been early in '26, because there was a funny coincidence on that thing. We walked into the place and it was very cold. I remarked to Mr. Mead, and I believe Mr. Dunsmore was present, that they ought to get more stoves fixed up and get more heat. Now that I was con-

nected with the thing I did not want any of the employes to get sick or anything like that so we could not get out items to supply our orders.

Q. 23. About when was that, Mr. Jessop?

A. That was either March or April.

Q. 24. Of what year?

A. '26.

Q. 25. Of the year 1926?

A. That is correct.

Q. 26. Did you have contact with that device after that time, that is to say, that model or any development therefrom from that time on?

A. Yes, from that point on we started to make several models to get the thing perfected, and eventually the thing was commercialized.

[fol. 335] Q. 27. Did you have to do with the commercialization of the device?

A. We marketed it.

Q. 28. You marketed it?

A. Yes, sir; it was called the Jessop Automatch.

Q. 29. I tender you a document which has been heretofore marked Plaintiff's Exhibit 32, and ask you whether or not that is a leaflet that was put out in connection with the device which you marketed?

A. That is correct. That was the leaflet that went in with the device, instruction sheets.

Q. 30. Do you know about when these instruction sheets were put out, have you some estimate as to that time?

A. Well, it must have been in '27.

Q. 31. Will you please look at the knocked-down carton which I tender you, which carton has been heretofore marked Plaintiff's Exhibit 35, and state whether or not you can tell what it is.

A. That was the carton which enclosed the lighter. That went in there and the lighter was boxed and shipped to the customer.

Q. 32. You mean Plaintiff's Exhibit 32?

A. The Jessop Automatch lighter.

Q. 33. And your instruction sheets?

A. Yes, sir.

Q. 34. To whom did you sell any of the lighters when you commercialized it?

A. Sold Montgomery Ward, Western Auto Supply and the rest of the chain stores dealing in automotive parts.

Q. 35. Do you know whether or not your device, the one about which we are speaking, was listed in the catalogue of Montgomery Ward & Company?

A. It was.

Q. 36. Will you please look at the pages of the catalogue which I tender you, and particularly the cover page and page 653, and state whether or not your device is the device illustrated and referred to on one of those pages, the cover page or page 653?

A. Yes, sir; it is right here, called the Automatic Lighter. There is the shape of it and the identical item.

[fol. 336] Q. 37. That is on page 653 of that catalogue?

A. That is on page 653; evidently this is a photostatic copy.

Q. 38. Yes, that is a photostatic copy. For what year?

A. Fall-winter, 1928-1929.

Q. 39. Approximately when would you say, with respect to the coming out of this catalogue of Montgomery Ward, that you brought the lighter to the attention of Montgomery Ward & Company?

A. About six months prior to that. They work on their catalogues about six months in advance, sometimes longer.

Q. 40. Sometimes longer?

A. Yes, sir. In other words, they had to make a test of this particular lighter, because they would go to the trouble of doing that to see that it was commercially perfect.

Q. 41. Is that the practice of Montgomery Ward & Company?

A. It certainly is, so far as I know.

Q. 42. Have you ever had contact with them before or after this incident about which we are speaking which leads you to understand that that is the practice of Montgomery Ward & Company?

A. Yes, I know when the Jessop button came out they tested the thing for maybe eight or nine or ten months before they even thought of putting it in their catalogue for sale.

Q. 43. Do you know yourself why that device snapped on and off which you saw on the bench at Central Stamping Company, Mr. Jessop?

A. Yes, I knew why it snapped off, because he took it apart and showed me the thermostatic switch in there, which raised up when it got hot, and came back when it got cold, it came back again, when he raised up this little catch or knob it would snap off and removed the catch.

Q. 44. I tender you a device which has heretofore been marked Plaintiff's Exhibit 32, and will ask you to state whether or not you can identify that device?

A. Yes, sir; that has been in my possession for a good many years. It was made for my desk.

[fol. 337] Q. 45. Is it one of these Mead devices?

A. One of the Mead devices.

Q. 46. About how long would you say you had that on your desk?

A. Well, I have not had it on my desk all that particular time.

Q. 47. But around your place?

A. In my possession.

Q. 48. In your possession?

A. Yes, sir; I would say that was made up in '27 or '28, I am not sure, sir.

Q. 49. But it has been in your possession ever since?

A. Yes, sir.

Q. 50. Will you please look at the device which I tender you, which has been heretofore marked Plaintiff's Exhibit 33, and state whether or not you have ever seen that before?

A. I have.

Q. 51. What do you know about that device?

A. This particular device was taken by Mr. Mead and myself to a Mr. McManus' office, in the General Motors Building, Detroit, and demonstrated to Mr. McManus, who said at that time that he had contact with a Mr. Earle, who represented, I don't know, some official of General Motors, represented himself to be some official of the General Motors Company. In Mr. McManus' office the item worked perfectly and Mr. McManus was very much enthused and was to submit the device for further test to Mr. Earle, and from Mr. Earle it was to go to Mr. Fred Fischer for final approval for standard equipment on the General Motors cars. What happened to it after it left the possession of Mr. McManus, I am unable to state.

Q. 52. Was it used for standard equipment on cars, was the order obtained?

A. No, sir.

Q. 53. Will you look at the set of papers I tender you, which have been heretofore marked Plaintiff's Exhibit 31, and state whether or not you have ever seen those papers before?

A. Yes, sir; these are the claims of Mr. Mead, or the papers requested by our patent attorneys at that time. [fol. 338] I know his name was Pineles, or something like that.

Q. 54. Of Cromwell, Greist & Warden, of Chicago?

A. Of Cromwell, Greist & Warden, of Chicago.

Q. 55. They were your patent counsel?

A. They were our patent counsel.

Q. 56. You had these papers written up by Mr. Mead so you could take them to the Patent Office?

A. That is correct; yes.

Q. 57. Do you know about when that paper was prepared? I mean roughly?

A. Well, it says on here, August 6th, 1927, but I believe Mr. Mead must have worked on that quite some time preparing that, long prior to that, because I understand Mr. Johnson—I do not mean your Mr. Johnson—George W. Johnson went over the papers and helped him write up some of these descriptions stated in there.

Mr. Wiles: That is objected to as hearsay.

Q. 58. At any rate, the papers embraced within Plaintiff's Exhibit 31 are those which were obtained to help patent counsel prepare the application for patent; is that it?

A. That is correct.

Q. 59. Have you any interest in the plaintiff in this suit, the Automatic Devices Company?

A. No, sir.

Q. 60. Have you any interest in Casco Products Corporation, of Bridgeport, Connecticut?

A. No, sir.

Mr. Byrne: That is all.

Mr. Wiles: No cross-examination.

(Deposition closed.)

By agreement of counsel for the respective parties to the above entitled cause, the signature of the witness to the foregoing deposition was waived.

[fol. 339] Notary's Certificate

STATE OF ILLINOIS,

County of Cook, ss:

I, Alice M. Rankin, a Notary Public in and for the County of Cook and State of Illinois, duly commissioned

and qualified and authorized to administer oaths and to take and certify depositions, do hereby certify that in the equity cause pending in the District Court of the United States for the Northern District of Illinois, wherein The Automatic Devices Corporation is plaintiff, and Sinko Tool and Manufacturing Company is defendant, No. 16,188, I was attended at 5733 Kenmore Avenue in the City of Chicago, State of Illinois, on Thursday, March 23, 1939 by counsel for the respective parties as appears above, and by Sidney Thomas Jessop, the witness named in the foregoing deposition that said witness being of sound mind and lawful age, was by me duly sworn to testify to the truth the whole truth and nothing but the truth in said cause and thereupon he testified as appears in the foregoing deposition and that counsel for the respective parties waived the signature of the witness to his deposition; that said deposition was taken stenographically by me, in the presence of said witness and at the time set forth, and that all was done in the presence of counsel for the respective parties.

I further certify that the foregoing is a true and correct transcript of all proceedings reported by me at the time and place above indicated.

I also certify that I am neither of counsel nor attorney to either of the parties to said suit; that I am not an employee of either counsel or either of the parties to said suit, nor interested in the outcome of said cause, and that I have retained said deposition for the purpose of [fol. 340] sealing up and directing and speedily and safely transmitting same to the said court for which it was taken.

Witness my hand and seal as such Notary Public at Chicago, Illinois, on this 24th day of March, 1939.

Alice M. Rankin, Notary Public. (Seal.)

Vol. II
TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1941

No. 37

**THE CUNO ENGINEERING CORPORATION,
PETITIONER,**

vs.

THE AUTOMATIC DEVICES CORPORATION

**ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SECOND CIRCUIT**

PETITION FOR CERTIORARI FILED MARCH 15, 1941.

CERTIORARI GRANTED APRIL 14, 1941.

SUPREME COURT OF THE UNITED STATES
OCTOBER TERM, 1941

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THE CUNO ENGINEERING CORPORATION,
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VOL. II

INDEX.

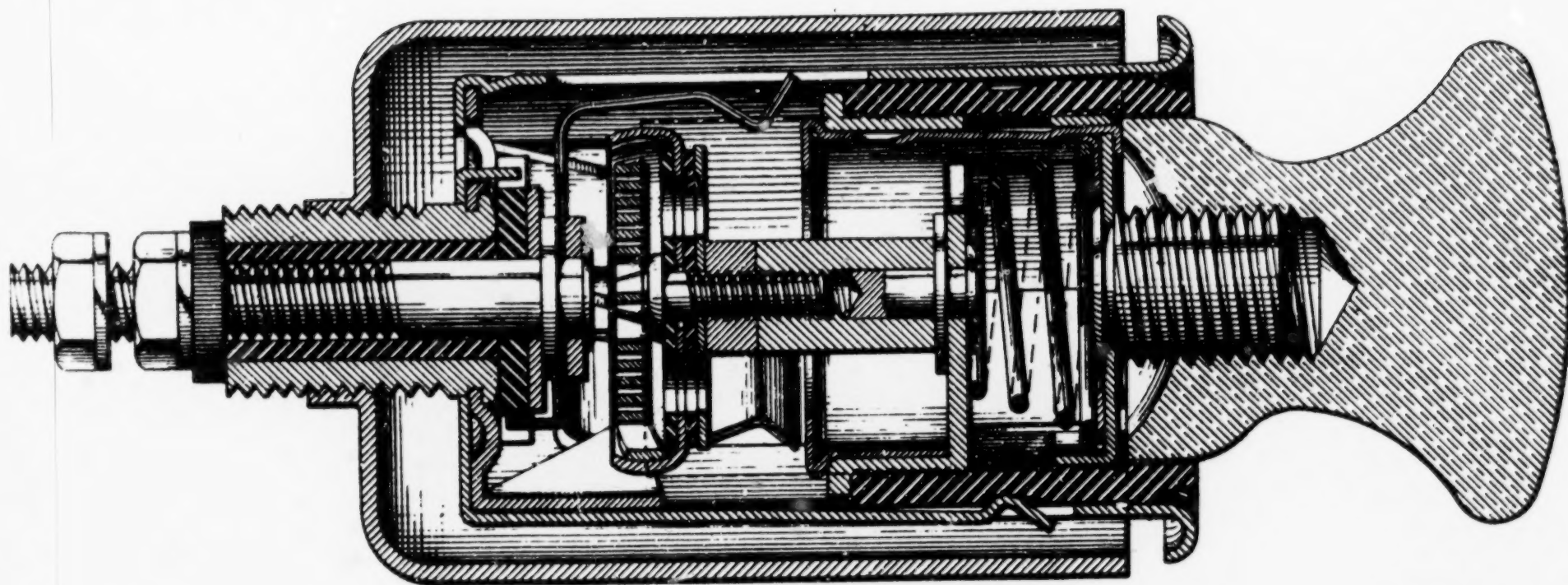
Record from D. C. U. S., District of Connecticut—Continued
Statement of evidence—Continued

PLAINTIFF'S EXHIBITS

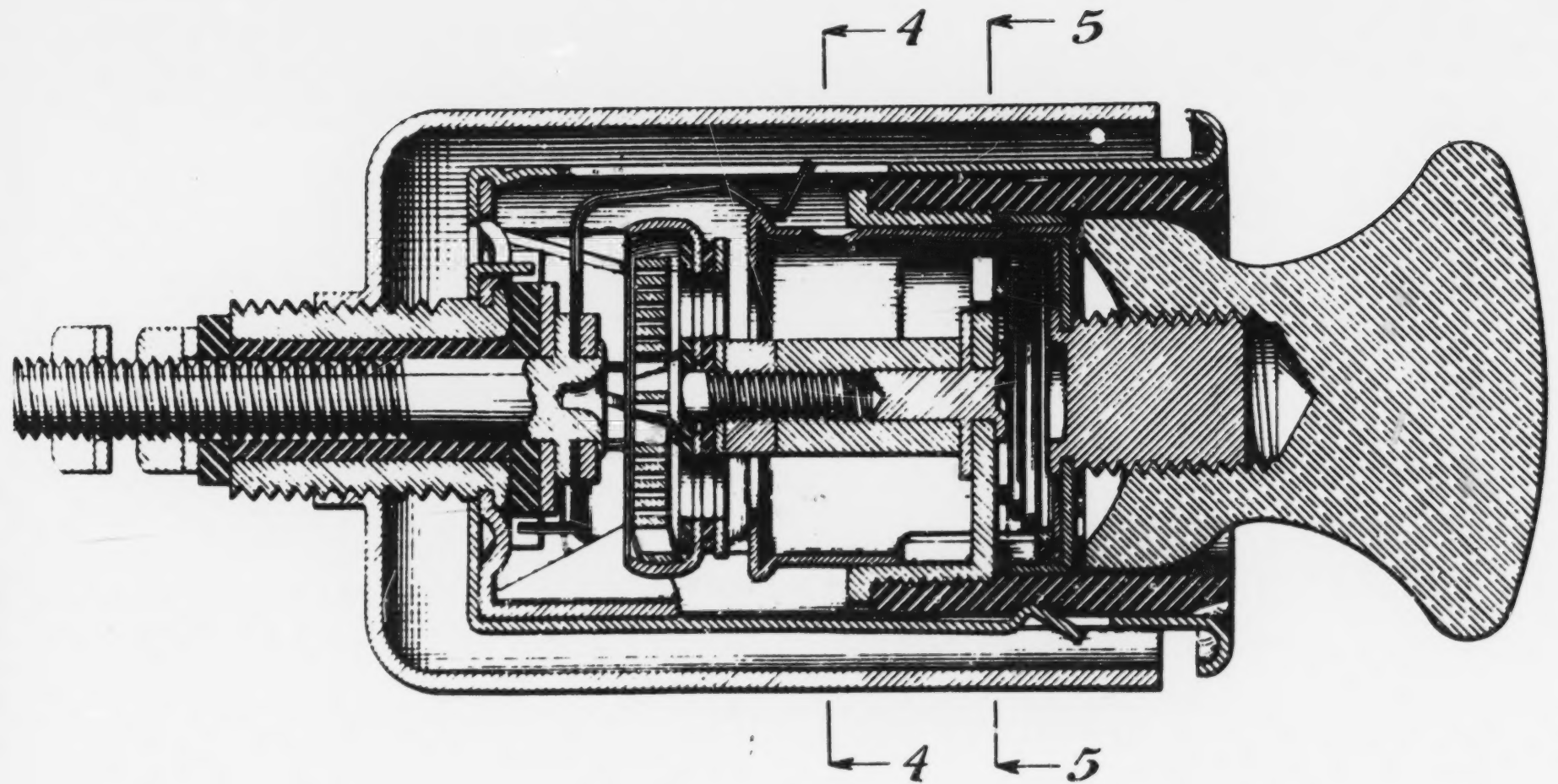
	Original	Print
1—Three drawings of Cuno Automatic Cigar Lighter	341	277
1-A—Drawing of Cuno Automatic Cigar Lighter..	344	280
1-B—Drawing of Cuno Automatic Cigar Lighter..	345	281
1-C—Drawing of Cuno Automatic Cigar Lighter..	346	282
3—License agreements between Automatic Devices Corporation and Casco Products Corporation.	347	283
4—Mead patent No. 1,736,544.....	355	289
5—First Cohen patent No. 2,140,311.....	362	296
6—Second Cohen patent No. 2,117,232.....	372	306
28—Photostatic copy of front page and page 480 of Montgomery Ward Catalog for Spring and Summer of 1929.....	379	313

JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., JULY 25, 1941.

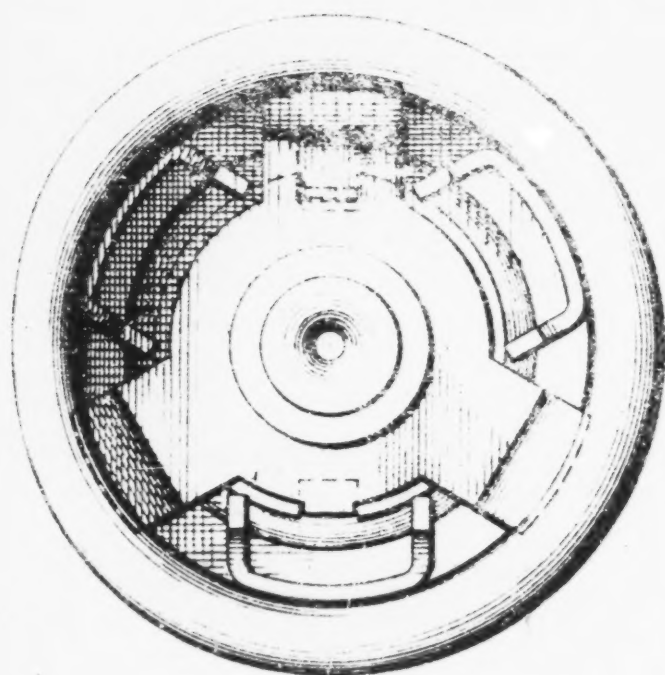
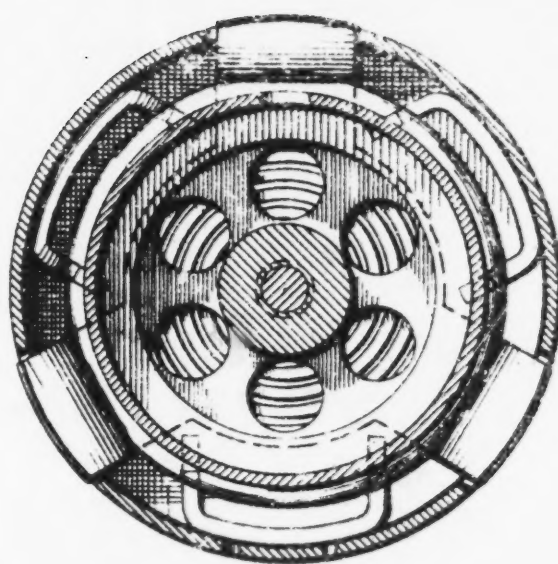
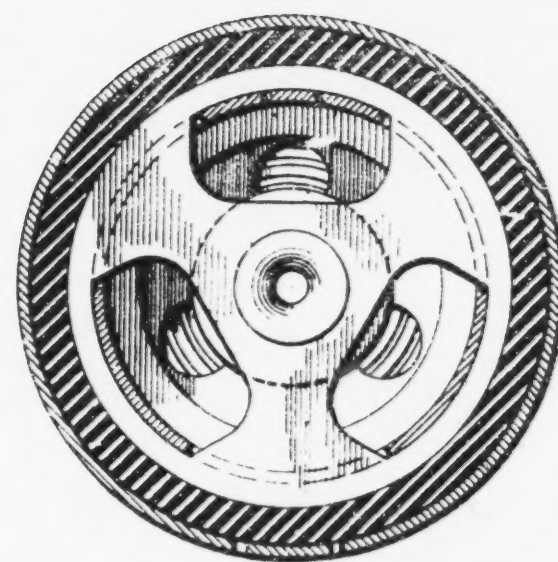
Fig. 1



Cuno Automatic Cigar Lighter
February, 1939

Fig. 2

Cuno Automatic Cigar Lighter
February, 1939

Fig. 3*Fig. 4**Fig. 5*

Cuno Automatic Cigar Lighter
February, 1939

Exhibit 1A

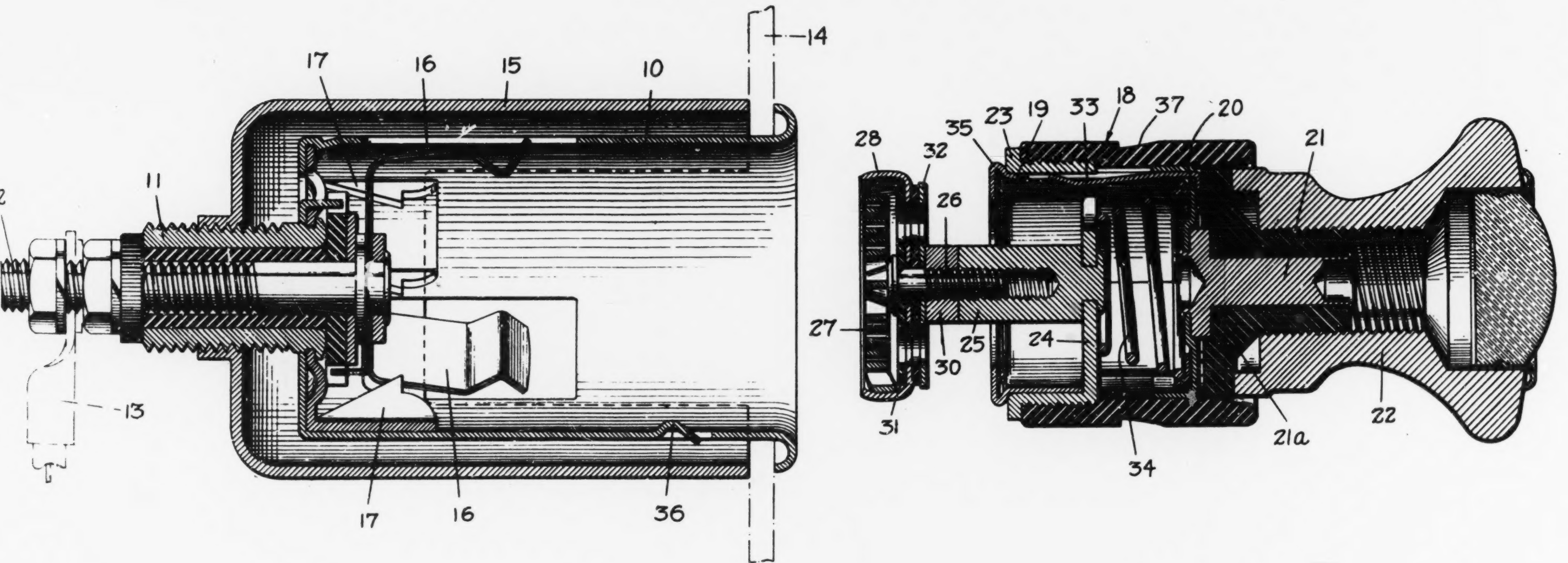
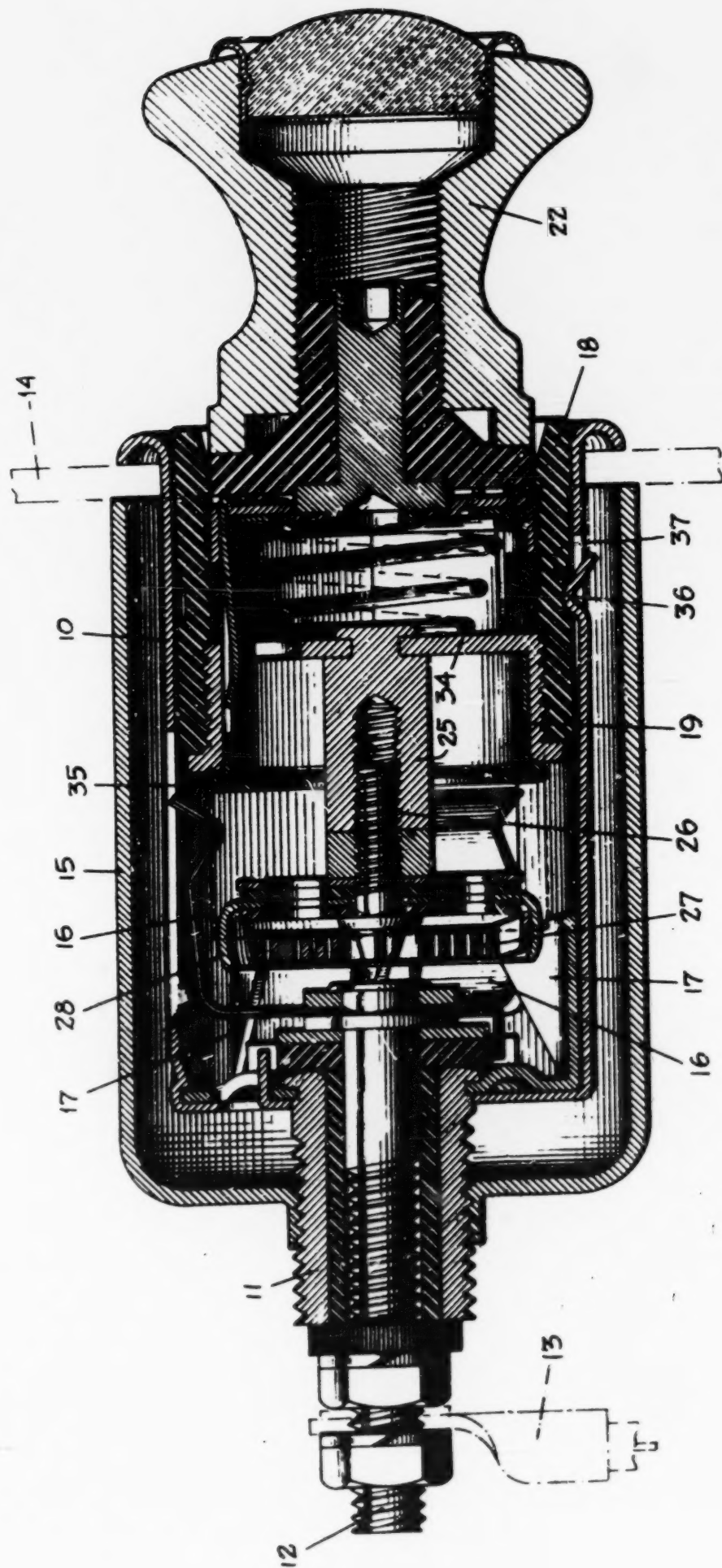
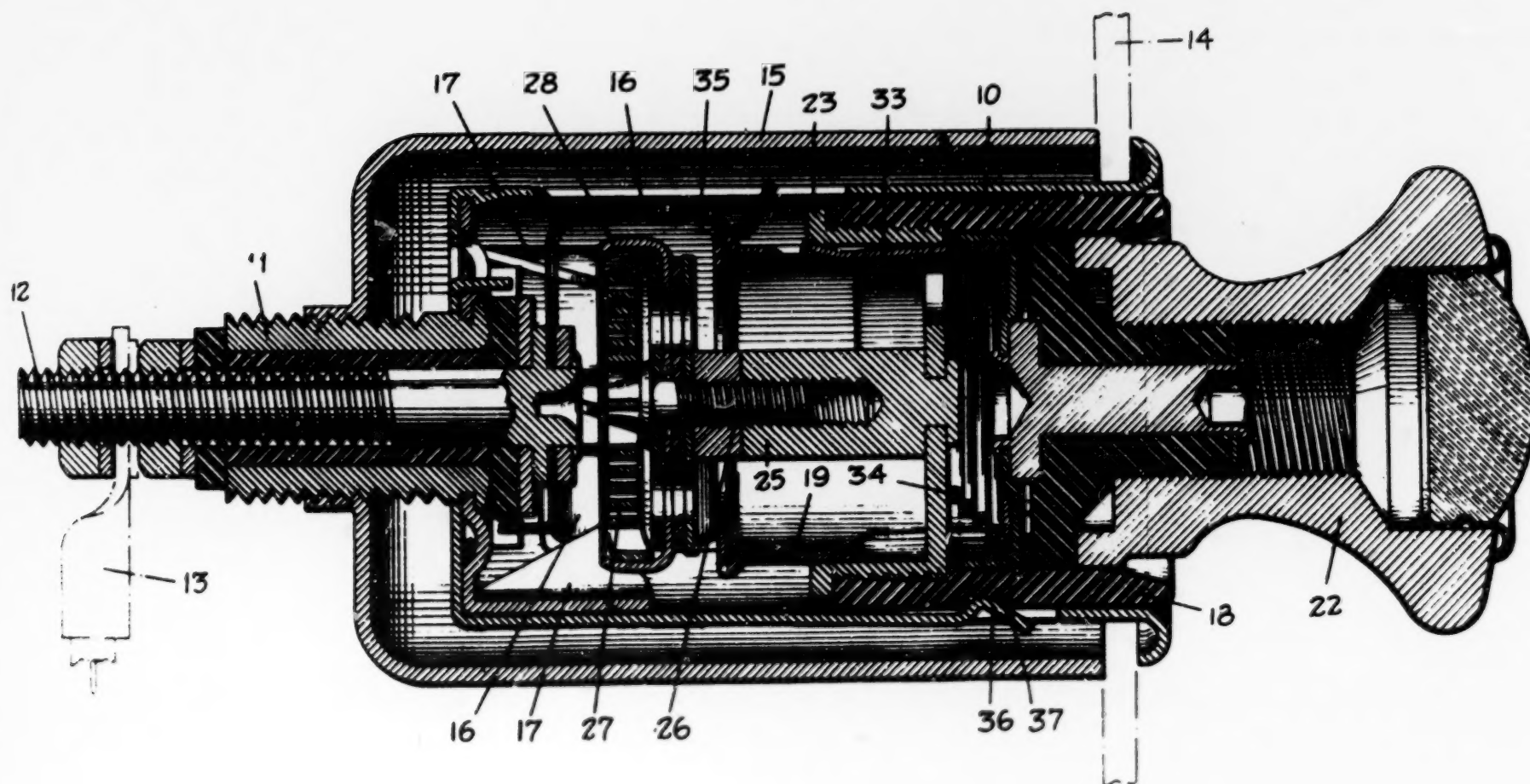


Exhibit 1B



Cuno Automatic Cigar Lighter

Exhibit 1C



Cuno Automatic Cigar Lighter

[fol. 347]

PLAINTIFF'S EXHIBIT No. 3.

(Copy)

License Agreement

This Agreement, made this 1st day of May, 1936, by and between Automatic Devices Corporation, a corporation organized and existing under the laws of the State of Connecticut, and having a principal place of business in the City of Bridgeport, County of Fairfield, and State of Connecticut, (hereafter called "Automatic"), and Casco Products Corporation, a corporation organized and existing under the laws of the State of Connecticut, and having a principal place of business in the City of Bridgeport, County of Fairfield and State of Connecticut, (hereafter called "Casco"),

WITNESSETH:

Whereas, Automatic is the owner of the entire right, title and interest in and to letters patent of the United States No. 1,736,544, dated November 19, 1929, Herbert E. Mead, for Cigar Lighters, and letters patent of the Dominion of Canada No. 280,963, dated June 12, 1928, Herbert E. Mead, for Cigar Lighters, and certain applications for letters patent for improvements in automatic lighters; and

Whereas, Casco is desirous of acquiring a license from Automatic to manufacture and sell automatic cigar lighters embodying the inventions of said Mead patents and said applications for patents on improvements thereon.

Now, therefore, in consideration of the sum of One Dollar (\$1.00), and other good and valuable considerations in hand paid by Casco to Automatic, receipt whereof by [fol. 348] Automatic is hereby admitted, the parties have agreed as follows:

I. Automatic grants to Casco a paid-up, royalty-free non-exclusive, non-transferable license to manufacture, use, and/or sell, throughout the United States, the territories thereof, and the Dominion of Canada, automatic cigar lighters embodying the inventions of said letters patent to Mead, U. S. Patent No. 1,736,544, and Canadian Patent No. 280,963, and embodying the inventions of any applications for patent on automatic lighters, or patents eventuating thereon, now owned or at any time hereafter

owned or controlled by Automatic, to the full end of the term or terms for which said patents, reissues, or extensions of said patents have or shall be granted.

II. In lieu of royalties, Casco agrees to pay to Automatic, or to pay for Automatic—(a) any expenses which may be incurred by Automatic in the acquirement of any patents or patent applications on automatic cigar lighters; (b) any expenses which may be incurred by Automatic, or on behalf of Automatic, in filing and prosecuting applications and obtaining patents on automatic lighters which Automatic may acquire; and (c) any expenses which Automatic may incur in filing and prosecuting suits for infringement of the patents of Automatic on automatic cigar lighters.

III. It is expressly understood and agreed by the parties hereto, that the license hereby granted to Casco is non-exclusive and non-transferable, and that Casco shall have no right to license others under said Mead patents, or any patents eventuating on said applications.

IV. This agreement shall be binding upon and inure to the benefit of the successors and legal representatives of the parties hereto.

[fol. 349] In Witness Whereof the parties hereto have executed this agreement by their respective officers thereunto duly authorized, and their respective corporate seals hereunto affixed, as of the day and year first above written.

Automatic Devices Corporation, By (Sgd.) Arthur A. Johnson, President. (Corporate seal.)

Casco Products Corporation, By (Sgd.) Joseph H. Cohen, President. (Corporate seal.)

STATE OF CONNECTICUT,
County of Fairfield, ss:

Arthur A. Johnson, being duly sworn, deposes and says: I am President of Automatic Devices Corporation, the corporation described in and which executed the foregoing instrument. I know the seal of said corporation and the seal impressed above is the corporate seal of said corporation. The said seal was affixed by order of the Board of

Directors of the said corporation. I executed the foregoing instrument on behalf of said corporation as its President and by authority vested in me by its Board of Directors.

(Sgd.) Arthur A. Johnson.

Subscribed and sworn to before me this 1st day of May, 1936. (Sgd.) Anne Pistey, Notary Public.
(Seal.)

[fol. 350] STATE OF CONNECTICUT,
County of Fairfield, ss:

Joseph H. Cohen, being duly sworn, deposes and says: I am President of Casco Products Corporation, the corporation described in and which executed the foregoing instrument. I know the seal of said corporation and the seal impressed above is the corporate seal of said corporation. The said seal was affixed by order of the Board of Directors of the said corporation. I executed the foregoing instrument on behalf of said corporation as its President and by authority vested in me by its Board of Directors.

(Sgd.) Joseph H. Cohen.

Subscribed and sworn to before me this 1st day of May, 1936. (Sgd.) Anne Pistey, Notary Public.
(Seal.)

(Copy)

License Agreement

This Agreement, made this 23rd day of February, 1939, by and between Automatic Devices Corporation, a corporation organized and existing under the laws of the State of Connecticut, and having a principal place of business in the City of Bridgeport, County of Fairfield, and State of Connecticut, (hereafter called "Automatic"), and Casco Products Corporation, a corporation organized and existing under the laws of the State of Connecticut, and having a principal place of business in the City of Bridgeport, County of Fairfield, and State of Connecticut, (hereafter called "Casco"),

Witnesseth:

Whereas, Automatic is the owner of the entire right, title and interest in and to the following letters patent of the United States—

Patent No.	Granted	Inventor	Title
2,117,232	May 10, 1938	J. H. Cohen	Cigar Lighter
2,117,703	May 17, 1938	J. H. Cohen	Cigar Lighter
2,129,374	Sep. 6, 1938	A. A. Johnson	Electric Cigar Lighter
2,137,195	Nov. 15, 1938	J. H. Cohen	Cigar Lighter
2,140,311	Dec. 13, 1938	J. H. Cohen	Cigar Lighter

and letters patent of the Dominion of Canada—

Patent No.	Granted	Inventor	Title
358,461	June 9, 1936	J. H. Cohen	Cigar Lighters
376,974	Oct. 11, 1938	G. F. Bahr	Cigar Lighters

Whereas, Casco is desirous of acquiring a license from Automatic to manufacture and sell automatic cigar lighters embodying the inventions of said above-enumerated patents.

Now, Therefore, in consideration of the sum of One Dollar (\$1.00), and other good and valuable considerations in hand paid by Casco to Automatic, receipt whereof by Automatic is hereby admitted, the parties have agreed as follows:

[fol. 352] 1. Automatic, in accordance with the provisions of Paragraph numbered "I" of the license agreement made the 1st day of May, 1936 between the parties hereto, has granted and hereby grants to Casco, and Casco accepts, a paid-up, royalty-free, non-exclusive, non-transferable license to manufacture, use, and/or sell, throughout the United States, the territories thereof, and the Dominion of Canada, automatic cigar lighters embodying the inventions of said U. S. letters patent to Cohen, No. 2,117,232; Cohen, No. 2,117,703; Johnson, No. 2,129,374; Cohen, No. 2,137,195; and Cohen, No. 2,140,311; and Canadian letters patent to Cohen, No. 358,461 and Bahr, No. 376,974, to the full end of the term or terms for which said patents, reissues, or extensions of said patents have or shall be granted.

2. In lieu of royalties, Casco agrees to pay to Automatic, or to pay for Automatic—(a) any expenses which may be

incurred by Automatic in the acquirement of any patents or patent applications on automatic cigar lighters; (b) any expenses which may be incurred by Automatic, or on behalf of Automatic, in filing and prosecuting applications and obtaining patents on automatic lighters which Automatic may acquire; and (c) any expenses which Automatic may incur in filing and prosecuting suits for infringement of the patents of Automatic on automatic cigar lighters.

3. It is expressly understood and agreed by the parties hereto, that the license hereby granted to Casco is non-exclusive and non-transferable, and that Casco shall have no right to license others under said patents.

4. This agreement shall be binding upon and inure to the benefit of the successors and legal representatives of the parties hereto.

[fol. 353] In Witness Whereof, the parties hereto have executed this agreement by their respective officers thereunto duly authorized, and their respective corporate seals hereunto affixed, as of the day and year first above written.

Automatic Devices Corporation, by (sgd.) Arthur A. Johnson, President. (Corporate Seal.) Casco Products Corporation, by (sgd.) Joseph H. Cohen, President. (Corporate Seal.)

STATE OF CONNECTICUT,
County of Fairfield, ss.:

Arthur A. Johnson, being duly sworn, deposes and says: I am President of Automatic Devices Corporation, the corporation described in and which executed the foregoing instrument. I know the seal of said corporation and the seal impressed above is the corporate seal of said corporation. The said seal was affixed by order of the Board of Directors of the said corporation. I executed the foregoing instrument on behalf of said corporation as its President and by authority vested in me by its Board of Directors.

(Sgd.) Arthur A. Johnson.

Subscribed and sworn to before me this 23rd day of February, 1939. (Sgd.) Anne Pistey, Notary Public. (Seal)

[fol. 354] STATE OF CONNECTICUT,
County of Fairfield, ss.:

Joseph H. Cohen, being duly sworn, deposes and says:
I am President of Casco Products Corporation, the corporation described in and which executed the foregoing instrument. I know the seal of said corporation and the seal impressed above is the corporate seal of said corporation. The said seal was affixed by order of the Board of Directors of the said corporation. I executed the foregoing instrument on behalf of said corporation as its President and by authority vested in me by its Board of Directors.

(Sgd.) Joseph H. Cohen.

Subscribed and sworn to before me this 23rd day of
February, 1939. (Sgd.) Anne Pistey, Notary Public. (Seal)

Nov. 19, 1929.

H. E. MEAD

1,736,544

CIGAR LIGHTER

Filed Aug. 24, 1927

2 Sheets-Sheet 2

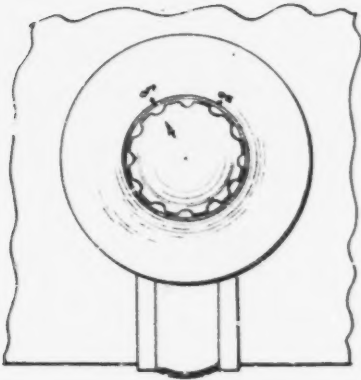


Fig 17

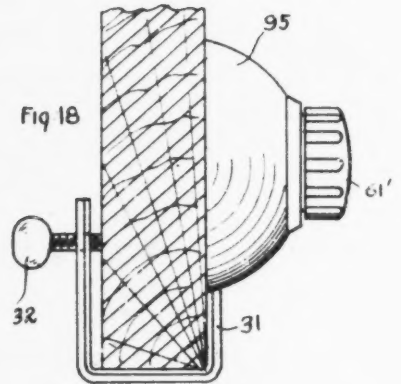


Fig 18

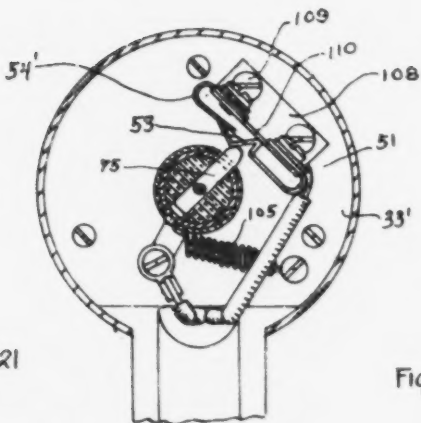


Fig 21

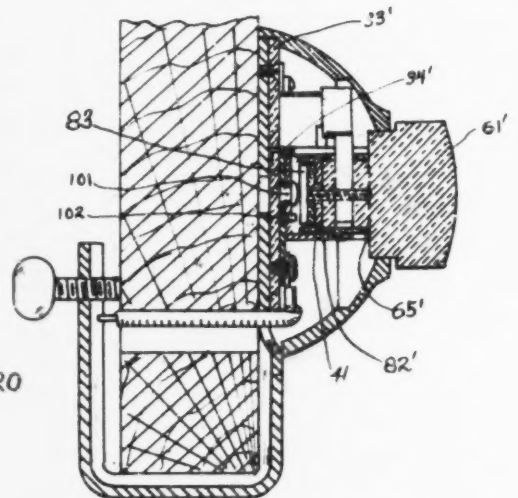


Fig 20

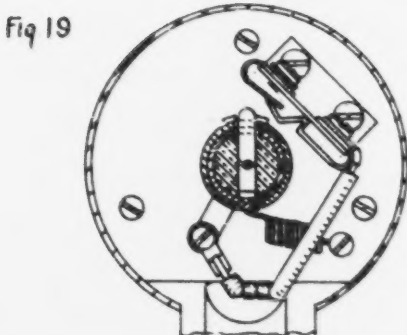


Fig 19

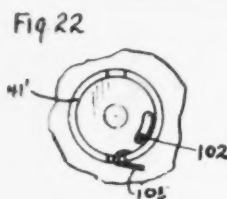


Fig 22

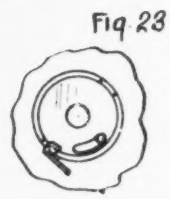


Fig 23

INVENTOR
Herbert E Mead
by *Cromwell, Great Warden*
ATTORNEY

UNITED STATES PATENT OFFICE

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CIGAR LIGHTER

Application filed August 24, 1927. Serial No. 215,236.

This invention relates to cigar lighters or devices of a similar nature wherein a member is arranged to be electrically heated to incandescence to be used for lighting cigars and the like.

Among the objects of the invention is a device of the above described character which is extremely simple and cheap in manufacture and more efficient than the devices used heretofore. The lighter, according to the invention, comprises a base unit and a plug removably mounted in the base unit. The plug carries a resistance coil that may be heated to incandescence to serve as a lighting medium. The base has a socket for receiving the plug, the socket with the plug being movable on the base between a position where the coil is energized and a position where the coil is de-energized. Normally the socket and the plug are held in a position where no current will flow through the heating coil. If the coil is to be heated for lighting purposes, the plug and the socket are moved to the energizing position where they are held locked until the heating coil has reached the desired temperature. A thermostatic element responsive to the temperature condition of the heating coil releases the engagement of the socket and plug in locked position whereupon the same are returned to the original position so that the plug may be removed and serve its purpose.

The lighter according to the invention embodies, in addition to the principles of construction and operation described above, a number of other new features constituting distinct objects of the invention and contributing to the simplicity of construction and the cheapness of manufacture, as well as the effectiveness of the operation of the same. These objects will be best understood from the following description of exemplifications of the invention, reference being had to the accompanying drawings, wherein

Fig. 1 is a side elevational view of the base assembly of a lighter embodying the invention;

Fig. 2 is a similar view of the base plate of the assembly in Fig. 1;

Fig. 3 is a similar view of the socket;

Fig. 4 is a top elevational view of the locking unit with thermostatic release element;

Fig. 5 is an elevational view of the pivot screw used to hold the socket and base to the supporting plate;

Fig. 6 is a top elevational view of the biasing spring which tends to hold the socket in off position;

Fig. 7 is a top view of the socket in mounted position with the spring removed;

Fig. 8 is a side elevation view of the assembled lighting plug;

Fig. 9 is a similar view of the plug knob;

Fig. 10 is a similar view of the plug shell that is held on the knob;

Fig. 11 is a similar view of the porcelain core of the plug;

Fig. 12 is an elevation of the latch pin of the plug;

Fig. 13 is a side elevation of the heating unit of the plug;

Fig. 14 is a transverse sectional view through the lighter with the plug held in the socket in the on position;

Fig. 15 is a central sectional view through the lighter showing the plug mounted within the socket;

Fig. 16 is a view similar to Fig. 14 but with the socket and plug in the off position;

Fig. 17 is a top elevational view of the completely assembled lighter mounted on a dash board;

Fig. 18 is a side elevation of the completely mounted lighter;

Figs. 19, 20 and 21 are views similar to Figs. 14, 15 and 16, respectively, of a lighter of somewhat modified construction;

Figs. 22 and 23 are top elevational views of the base socket in the modification of Figs. 19 to 21 with the socket in the on and off positions.

Referring to the drawings, a cigar lighter is shown of a type suitable for use on dash boards of automobiles, the lighter comprising a metallic supporting plate 31 having a U-shaped extension adapted to overlap the dash board and arranged to be clamped there-to as by means of a clamping screw 32, as seen in Fig. 18. The supporting plate 31 carries a base unit or base assembly of the

lighter, as shown in Fig. 1, the base assembly being illustrated in Figs. 2 to 7.

The base assembly comprises a fiber or other insulating plate 33 adapted to be secured to the supporting plate 31. Mounted in the center of the fiber plate 33 is a socket carrier 34, Fig. 2, which consists of a brass stamping having two outwardly turned lugs 35 for anchoring in the fiber plate 33, and an upstanding lug 36 adapted to engage a slot in the socket referred to hereinafter. The socket carrier has a central hole and on one side thereof there is an upstanding bracket 37.

Mounted on the socket carrier is a socket 41, Fig. 3, in the form of a cup-shaped metallic cylinder having a closed bottom with a central opening through which it is rotatably secured above the carrier as by means of a pivot screw 42, Fig. 5. One side of the socket cylinder has a perforation 43 and the opposite side thereof has a slot 44 referred to hereinafter. The bottom of the socket has also a circular slot 45, Fig. 7, into which the upstanding lug 36 of the socket carrier projects to limit the rotary movement of the socket around the pivot screw 42. A spiral biasing spring 47 having its inner end anchored in the head of the screw 42 and its outer end secured to the wall of the socket 41 tends to hold the socket in one end position as determined by the lug 36 which thus acts as a stop, this position corresponding to the off position of the lighter. The lower part of the socket surrounding the spiral biasing spring 47 is somewhat bulged in order to accommodate the spring.

The bracket 37 of the socket carrier has insulatingly mounted thereon a latch and release element 51 comprising a latch or catch spring 52, of phosphorous bronze for instance, having a folded end portion 53 adapted to act as a catch when held in the bent-away position by means of a thermostatic element such as a bimetallic strip 54. The catch spring 52 and the bimetallic strip of the spring 54 are suitably mounted on a supporting plate 55 which is insulatingly secured to the bracket 37.

The several parts described above are readily assembled into the complete base unit by simply screwing the latch unit to the upright part of the socket carrier; placing the pivot screw 42 in the base opening of the socket 41 and screwing it over the socket carrier on the fiber plate 33; and placing the spiral spring within the lower bulged portion of the socket. The base has also two supply connections in the form of two conductors 57 and 58 leading from a source of electric energy to a terminal extension 59 of the socket carrier and to the latch plate 55, respectively.

Within the socket 41 there is removably mounted a plug unit 61 shown completely as-

sembled in Fig. 8 and having its several parts illustrated in Figs. 9 to 12. The plug comprises a knob 62 of suitable insulating material, such as bakelite, having a molded-in central square brass pin 63 provided with a longitudinal tapped perforation 64. The knob has mounted thereon a cylindrical metallic shell 65, stamped and drawn from brass for instance. The shell is open at one end and closed at the other, having at the closed end a square hole fitting over the square pin of the knob. On one side of the side wall of the shell there is a perforation 66 corresponding to the perforation 43 in the socket, and on the opposite side of the shell there is an embossed protuberance 67 adapted to fit into the slot 44 of the socket and engage the same so that upon turning the shell by means of the knob the socket will be rotated on the pivot screw 42.

Within the brass shell 65 there is mounted a core 71 of porcelain or similar material. The core fits the shell and has a longitudinal perforation 72 of which the lower portion fits over the square end of the knob pin 63. Extending transversely through the core at right angles to the longitudinal perforation there is a second perforation 73 in which is mounted a latch pin 75, one end of the latch pin being rounded at 76 for smooth engagement with the spring latch 53. Fitting into the open end of the shell in front of the porcelain core 71 is a heating unit 81 comprising a flat cup-shaped metallic container 82 having mounted therein an insulated spirally-wound heating coil 83, the outer end of which is connected to the walls of the cup and the inner end of which is secured to a central screw 84. The coil and the screw are insulated from the cup as by means of mica washers 85 so that by establishing circuit connections to the walls of the cup 82 and to the screw 84, current may be sent through the coil 83. The coil 83 with the screw 84 are inserted through the perforation in the bottom of the cup 82 and held in place with the mica washers by a nut 86 screwed against the bottom of the cup. The heating unit may thus be readily replaced with little cost.

The heating unit screw 84 is arranged to be threaded into a tapped perforation 88 in the latch pin 75. To assemble the plug the porcelain core 71 is inserted in the brass shell 65 and the two are secured over the square pin in the knob by means of a screw 91. The latch pin 75 is thereupon inserted through the perforation 66 of the shell into the perforation 73 of the core and the heating unit screw 84 screwed in place, thereby firmly locking the latch pin in its position, the perforation 66 of the shell being sufficiently wide to prevent contact of the pin with the shell. Accordingly, with this arrangement the latch pin will act as a terminal connection to the inner end of the heating coil 83 while the

shell will act as a terminal connection to the outer end of the coil. The walls of the cup 82 of the heating unit are preferably somewhat tapered so as to wedge tightly on the inside of the shell 65 when screwed down in place.

When the plug is inserted into the socket, the pin 76 and the protuberance 67 slide into the slots 43 and 44 of the socket, the protuberance 67 serving to drive and rotate the socket when the knob is turned. The width of the slot 44 of the shell is such that the latch pin makes no contacting connection with the walls of the socket.

As explained above, the spiral biasing spring 47 normally holds the socket in the off position as shown in Fig. 11. Accordingly, with the plug inserted into the socket the terminal end 76 of the latch pin will project freely in space and no current will be passing through the heating coil. In order to operate the lighter, the plug is turned to the on position. This brings the projecting end of the latch pin 76 into engagement with the detent of the catch spring 53 which is held pressed outwardly by the metallic strip 54. The socket with the plug are held in this position by the detent against the tension of the spiral biasing spring 47 and in this position a circuit is established from the supply wire 57 through the terminal 59, socket 41, shell 65, heating cup 82, through the heating coil to the screw 84, thence through the spring 53, bimetallic strip 54, to the other supply wire 50. The thermostatic element in the form of the bimetallic strip 54 is so arranged as to hold the latch pin 75 in engagement with the pin 75 until the coil has become heated to incandescence and is ready to be used for lighting cigars or the like.

As the heating coil warms up and becomes incandescent the simultaneously heated bimetallic strip 54 becomes deflected so that the end acting upon the detent 53 turns inwardly towards the supporting plate 55 thereby releasing the latch pin, the relative arrangement being such that the latch pin is not given free until after the heating coil has reached the desired temperature. As soon as the latch pin is released the biasing spring 47 throws the socket with the plug to the off position. The plug may then be removed and the heating coil being at incandescence the cigar or cigarette may be lighted. The on position of the plug and the socket is shown in Fig. 16.

In Figs. 17 and 18 the assembled lighting unit is shown comprising also a dome-shaped shell 95 enclosing the operating elements of the lighter to prevent dust, and the like, from reaching the same.

In the modification of the invention shown in Figs. 19 to 23 the arrangement of the base and of the plug is similar to that of the modification described in the previous figures, the distinctions residing in minor construc-

tional features of the various elements. Thus, the socket 41 is secured to the socket carrier 34' by a rivet 101 which is so arranged as to permit rotary movement of the socket on the rivet shank, a pin 102 serving as a stop to limit said movement. Instead of a spiral biasing spring as used in the first described modification, the socket is normally held in the off position by means of a coil spring 105, one end of which is attached to the socket wall as shown in Figs. 22 and 23, and the other end of which is attached to the fiber base plate 33'.

The latch unit 51 is carried on a separate bracket 108 also secured to the fiber plate, as by means of screws 109. The bracket has a perforation 110 to permit the folded detent portion 53 to recede back and unlock the latch when released by the bimetallic thermostat 54'.

The plug 61' is also somewhat different from that used in the first described modification in that the shell 65' does not encircle the cup 82' of the heating unit. Fig. 19 shows the position of the socket and plug in the off position while Fig. 21 shows the on position of the lighter, Figs. 22 and 23 illustrating the range of the movement of the socket 41' as limited by the stop formed by the pin 102.

The control action of the thermostatic element 54 depends on the rate at which it is heated while current is being sent through the lighting coil 83. Accordingly, the action of the device will depend on the manner in which the heat control of the thermostatic element will be effected. In some cases the thermostatic element 54 will be heated only by conduction of heat from the heating coil 53 and also by radiation and convection. In other cases it may be preferable to include the thermostatic element 54 in the circuit from the latch pin 75 so that either the entire or part of the heating current must traverse the bimetallic element 54 and heat the same coincidentally with the heating of the lighting coil.

In another modification of the invention, the biasing spring 47 shown in Fig. 6, in connection with the first modification described hereinabove, is made of a thermostatic material, for instance a bimetallic strip which on being heated increases the force with which it acts upon the socket 41 tending to return it to its off-position. Accordingly, when the lighter such as shown in Figs. 14 to 16 but with a biasing spring of thermostatic material, is turned to the on-position, Fig. 14, and the heater spiral 83 is energized and heated, the force exerted by the biasing spring 47 will increase with the rise of the temperature of the heater spiral until the force exerted by it will be sufficient to pull the latch pin 75 off from the engagement with the latch spring 53. In such arrangement, it is not necessary to use the thermostatic element 54

for upholding the latch spring 53 but an ordinary spring material may be used in making the element 54. However, the thermostatic action of both elements may be utilized with advantage, that is, bimetal may be used both for the element 54 that holds the latch spring 53, as well as for the biasing spring 47, in which case the release of the latch pin 75 from the off-position is determined by the thermostatic action of both thermostatic elements.

Cigar lighters utilizing either one of the foregoing constructions operate very satisfactorily.

When making the biasing spring 47 of thermostatic material, it is often found desirable to use an additional spring 47^a arranged in the interior thereof so as to press the thermostatic spring 47 outwardly. This permits convenient control of the action of the thermostatic spring 47 and has proven very satisfactory in adjusting and controlling the length of time required to increase the tension of the thermostatic element 47 to a point where the latch pin 75 will be pulled off from engagement with the latch spring 53.

The invention is susceptible of many other modifications and the various features thereof may be utilized in a variety of other arrangements. It is accordingly desired that the appended claims be given a broad construction commensurate with the scope of the invention.

I claim:

1. In a device of the class described, a base member, a removable plug supported on said base member, an electrical heating coil on said plug, means on said base member for moving said plug to an energizing position in which said coil is energized, means tending to withdraw said plug from said energizing position, and a thermostatic element responsive to the heating of said coil for controlling the action of said withdrawing means.

2. In a device of the class described, a removable heating member having an electrical heating unit, a socket for receiving and holding said heating member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and means responsive to the temperature of said heating unit for interrupting said energizing circuit.

3. In a lighting device for cigars and the like, a removable heating member having an electric heater, a support for receiving and holding said heating member, current supply terminals on said support, said heating member being movable on said support to a position where said heating unit is energized from said terminals and means responsive to the temperature of said heating unit for controlling the heating thereof.

4. In an electrical lighter of the class de-

scribed, a plug having an electrical heater, a socket for receiving said member and holding the same, a base for said socket, current supply terminals on said base, said socket being mounted on said base for movement to a position for establishing an energizing connection from said terminals to said heater, and means responsive to the heating of said heater for interrupting the current supply connections thereto.

5. In an electric lighting device of the class described, a removable heating member having an electrical heater, a base, a movable socket on said base for receiving said heating member, current supply terminals on said base, and a bi-metallic thermostat for controlling movement of said socket to vary the energization of said heater on said base.

6. In an electric lighter of the class described, a lighting member having an electrical heater, a socket for receiving and holding said heater, current supply terminals on said base, means for moving said socket and the heater supported thereby to position where it is energized from said current supply terminals, means tending to withdraw said socket from the energizing position, a latching means for locking said socket in the energized position, and a bi-metallic strip controlling said latching means to cause withdrawal of said heating member from the energizing position.

7. In a lighter of the class described, a base, a socket member movably mounted on said base, a heating plug adapted to be inserted and held in said socket, an electric heating coil on said plug, said socket being movable on said base member between an energizing and a de-energizing position.

8. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket, an electrical heater on said plug, electrical supply terminals on said base member, said socket being rotatable between an energized position where circuit is established from said terminals to said heater and an off position where said circuit is interrupted, means tending to hold said socket in the off position, locking means for locking said socket and the associated plug in the energizing position and thermostatic means for releasing said locking means.

9. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket, an electrical heater on said plug, electrical supply terminals on said base member, said socket being rotatable between an energized position where circuit is established from said terminals to said heater and an off position where said circuit is interrupted, means tending to hold said socket in the off posi-

tion, locking means for locking said socket and the associated plug in the energizing position and a bi-metallic element responsive to the heating of said heater for releasing said locking means.

10. In a lighter of the class described, a base member, a tubular socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket and rotated therewith, a heater on said plug, said plug having a shell fitting and engaging such socket; a latching pin on said plug insulated for said shell, said heating element being connected between said pin and said shell, latching means mounted on said base for engagement with said pin, an electric terminal connection to said socket, an electric terminal connection to said latching means, means tending to move said socket to an unlatched position and a thermostatic element for releasing said latching means in response to the heating of said heater to cause de-energization of said heating coil after being brought to temperature in the energizing position.

11. In an electric lighter of the class described, a base member, a heater member movably mounted on said base member, an electric heater on said heater member, electrical supply terminals on said base member, said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, and automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater.

12. In an electric heater of the class described, a movable heating member having an electrical heating unit, a socket for holding said heater member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and automatic means for withdrawing said heating unit from said energizing position upon predetermined heating of said heating unit.

13. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted in said socket, an electrical heater on said plug, said socket being rotatable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, locking means for locking said socket in the energized position, thermostatic means for releasing said locking means, and a spring screened against the action of said heater arranged to withdraw said socket to the off position.

14. In an electric heater of the class described, a base, a socket movably mounted on said base, a heating plug adapted to be inserted into said socket, a heating unit on the inner end of said plug adapted to be housed in said socket, electrical supply terminals, said socket being movable between an energized position where a circuit is established from said terminals and an off position where said circuit is interrupted, and a spring disposed outside of said socket tending to move the same to a de-energized position.

15. In an electric heater of the class described, a base, a socket movably mounted on said base, a heating plug adapted to be inserted into said socket, a heating unit on the inner end of said plug adapted to be housed in said socket, electrical supply terminals, said socket being movable between an energized position where a circuit is established from said terminals and an off position where said circuit is interrupted, a spring disposed outside of said socket tending to move the same to a de-energized position, and automatic means holding said plug in an energized position until predetermined heating thereof.

In testimony whereof I have hereunto subscribed my name.

HERBERT E. MEAD.

Fig. 1

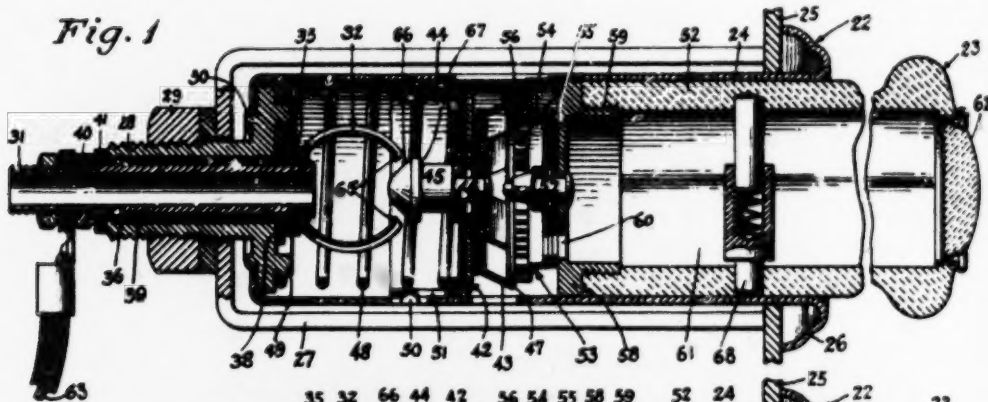


Fig. 2

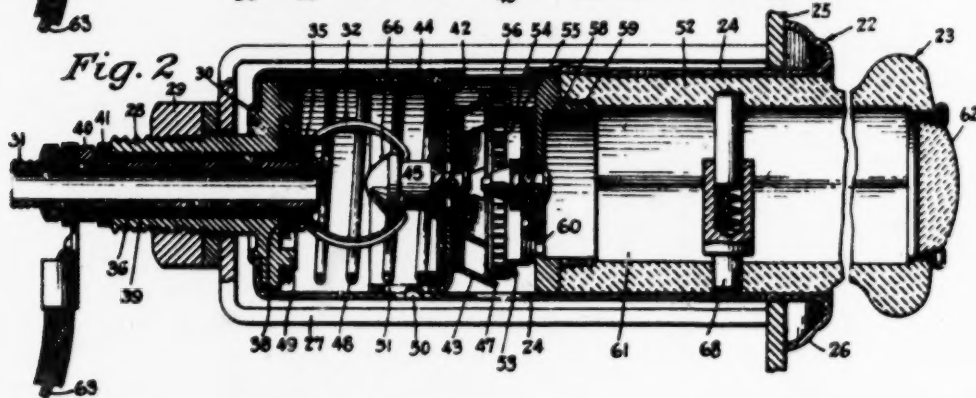


Fig. 3

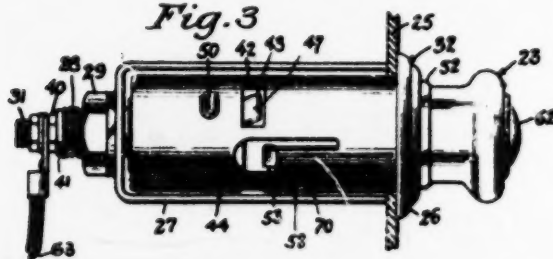


Fig. 4

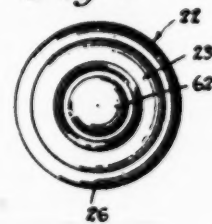


Fig. 5



Fig. 6



Fig. 7



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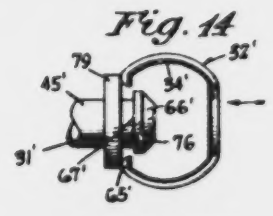
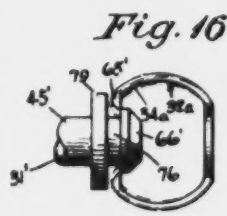
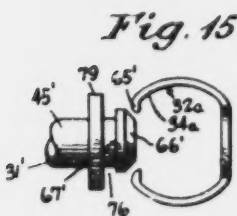
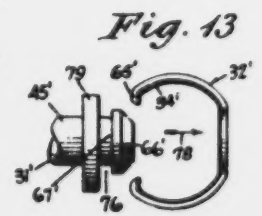
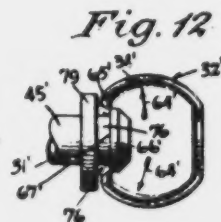
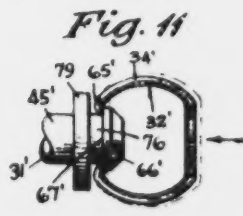
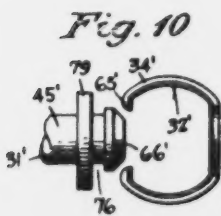
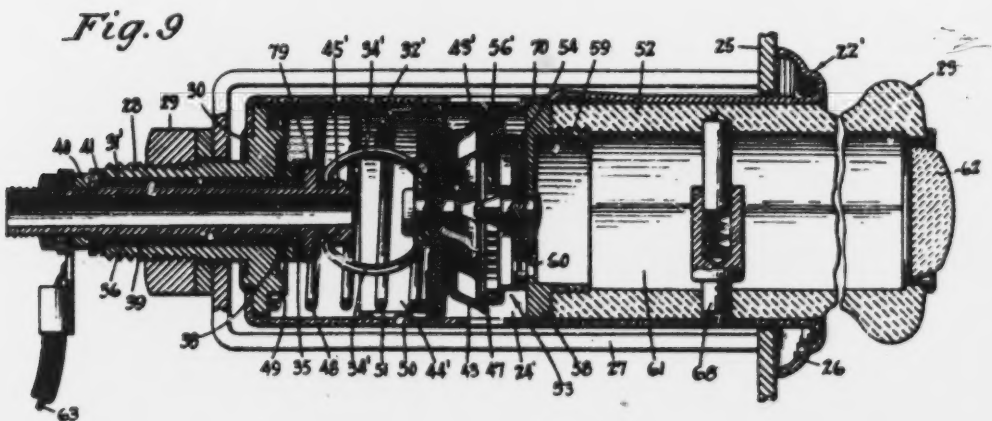
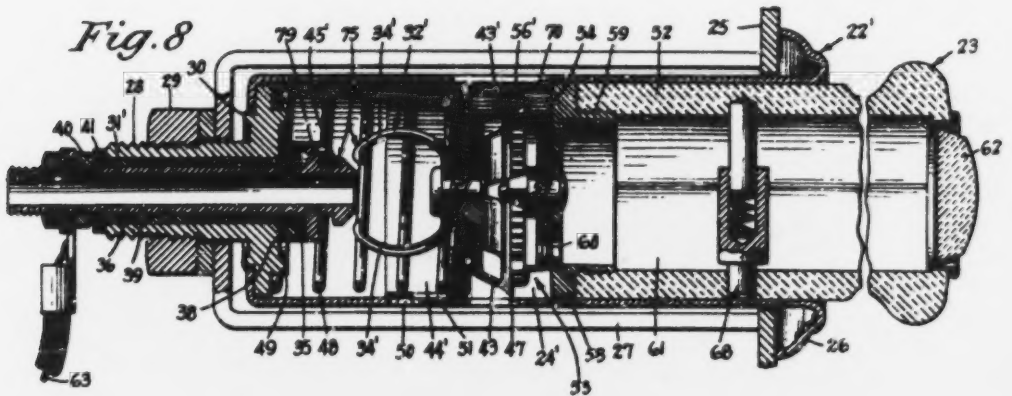
Dec. 13, 1938.

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CIGAR LIGHTER

Original Filed July 23, 1932 2 Sheets-Sheet 2



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2,140,311

CIGAR LIGHTER

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Original application July 23, 1932, Serial No. 624,193, now Patent No. 2,117,703, dated May 17, 1938. Divided and this application January 2, 1937, Serial No. 118,838

27 Claims. (Cl. 219—32)

This invention relates to electric cigar lighters, and more particularly to the type in which an igniting unit is completely removable from a holding device for use. Such cigar lighters are particularly desirable for use on motor vehicles.

An object of this invention is to provide an improved cigar lighter of the type referred to in which the current-supply circuit for the heating element of the igniting unit, after being closed as the result of manual engagement of a portion of the igniting unit which is accessible while the latter is supported on the holding device, is automatically maintained closed until the heating element is heated for use.

Heretofore it was proposed to do this by providing parts of the automatic control for the circuit, some on the holding device and some on the igniting unit, with the result that these separable parts had to be made to match each other in each particular cigar lighter for best results, and hence the igniting units and the holding devices, respectively, were not interchangeable with other like igniting units and holding devices.

According to the present invention, this difficulty is obviated by so arranging the means for automatically controlling the circuit supplying current to the heating element and restoring the circuit to normal open-circuit position, that they are carried entirely by solely one and the same of the two separable parts of the cigar lighter. With this new arrangement of such means, they remain in predetermined operative relation relative to each other in a single operative structure irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices, which is of great advantage in the manufacturing, installation and servicing of such cigar lighters.

Another feature of this invention is the provision of an improved circuit-controlling means for the cigar lighter comprising relatively movable members manually caused to be moved to close the circuit, detent means for holding the members in closed-circuit position, yielding means to restore them to open-circuit position, and heat-responsive means for controlling the return of the members to open-circuit position.

Preferably, though not always essentially, the heat-responsive means is in heat-receiving relation with the heating element and may advantageously be bimetallic and carry the detent means as well as surfaces contacting with surfaces on one of the relatively movable members to conduct current to the heating element. Also, the heating element, the relatively movable mem-

bers, the detent means, the heat-responsive means, and the means for urging the members to open-circuit position, either all or some of these, preferably, though not always essentially, may be arranged in the part of the cigar lighter carrying them so as to be coaxial with each other. This construction makes for easy assembly of the parts and close nesting so that they may be contained safely conveniently within the part of the cigar lighter carrying them.

Another feature of this invention is the provision of means whereby the circuit through the heating element may be maintained closed by manual effort, even though the heat-responsive means has acted to open the circuit, so that the heating element may be reheated for a repeated use, without waiting for the heat-responsive element to cool sufficiently to itself close the circuit.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is a longitudinal sectional view of the cigar lighter of the present invention in normal inoperative position.

Fig. 2 is a view similar to Fig. 1, but with the cigar lighter in closed or operative position.

Fig. 3 is a plan view of the cigar lighter.

Fig. 4 is a front view.

Fig. 5 is a detail view showing the thermostatic catch of the present invention in the inoperative position.

Fig. 6 is a detail, similar to Fig. 5, but shows the catch in the operative position.

Fig. 7 is a view similar to Figs. 5 and 6, but shows the catch in its fully released condition.

Fig. 8 is a longitudinal sectional view, similar to Fig. 1, but with a modified form of catch and circuit closer, in the normal inoperative position.

Fig. 9 is a view similar to Fig. 8, but shows the parts in the operative position.

Fig. 10 is a detail view of the circuit closer and thermostatic catch of this form of the invention in the open inoperative position, similar to Fig. 8.

Fig. 11 is a detail view, similar to Fig. 10, but shows the catch in closed-circuit position.

Fig. 12 is a detail view, similar to Fig. 11, but shows the catch in its partially released position.

Fig. 13 shows the catch and circuit-closing parts returned to the open inoperative position.

Fig. 14 is a view similar to Fig. 13 of the invention showing the catch used to effect an auxiliary closing of the circuit even though the catch is thermostatically maintained in an open position.

Fig. 15 is a view similar to Fig. 10, but shows the catch and circuit closer parts made of regular material, rather than bimetallic material.

Fig. 16 is a detail view, similar to Fig. 15, in the closed-circuit position and about to be released.

This is a division of my application Serial No. 624,193, filed July 23, 1932, now Patent No. 2,117,703, issued May 17, 1938.

For convenience and clarity in the following description, the present invention is shown as applied to what may be termed "sleeve-type" cigar lighters for use with automobiles, similar to the lighter disclosed in my Patent No. 1,944,925, issued January 30, 1934, but it should be understood that it may also be used with other types of cigar lighters. Broadly, the cigar lighter comprises a holding device or base member 22 and a removable igniting unit 23 which may be mechanically and electrically separated from the base member for use.

The base member 22 comprises a socket 24 adapted to be passed through a suitable aperture in an instrument panel 25 of an automobile, or other convenient location, until a flange 26 at the front end thereof engages with the front face of the panel. The socket is rigidly secured in place with a U-shaped yoke 27 fitted over an outer sleeve 28 and a clamping nut 29. The outer sleeve is preferably rigidly secured to the socket 24 by a spun-over flange 30.

A contact-carrying sleeve 31 is insulatedly mounted in the outer sleeve 28, and at its forward end there is secured a main contact 32 having a main body portion 33 shaped similar to a washer and one or more integral hook-shaped fingers 34 extending therefrom. The contact carrier sleeve is secured in place by passing a washer 35 and tube 36 of insulation over the contact sleeve 31, passing an insulating washer 38 over the insulating sleeve 36, and then passing the entire assembly through a bore 39 of the outer sleeve 28, where it is rigidly secured to the latter part with the nut 40 and insulating washer 41. These various parts of insulation just described prevent electrical connection between the contact sleeve 31 and outer sleeve 28 and are preferably made of mica in order to be heat resisting.

The base member is completed with a relatively movable member or slide 42 which carries an intermediate contact 43. This slide comprises a cup or sleeve 44 which has a free fit within the socket 24. Near its center the cup is provided with a contact and catch stud 45 which is insulated from the cup by suitable insulating washers. It is held in place by spinning or otherwise heading-over the end of the shank 46, and when this is done a contact washer with yielding fingers 47 forming the intermediate contact 43 is secured to the cup so that current may be passed from the contact 45 to the fingers. The cup also serves to hold a spring 48 in the socket 24, free from the side walls at one end, while the other end of the spring is located in the socket by a shoulder portion 49 of the outer sleeve 28. Longitudinal movement of the slide 44 is limited in two directions by a lanced finger 50 part of the socket 24 being bent into and engaging the ends of a slot 51 in the cup.

The removable igniting unit 23 comprises a body 52 preferably made of Bakelite or some similar insulating material of a size to slide freely in the socket 24. At one end it supports a heater unit 53 comprising a spirally wound heating coil 54 in a cup 55. One end of the heating coil is connected electrically to the outer wall of the

shell by means of a ring 56 which is spun thereover and the other end of the coil is connected to a stud 57 at a slot in the latter. This stud passes through a suitable hole in the shell 55 and is insulated from the latter with suitable insulating washers. It is mechanically and electrically secured to a ring 58 which has a threaded connection 59 with the igniting unit body. The heater unit 53 is provided with a series of holes 60 which allow the incandescent glow of the heating coil to pass through a bore 61 of the body 52 to the front end of the igniting unit 23 where they are magnified and projected by means of a ruby glass 62, or by a disk of Catalin or similar light-conducting material.

The wiring circuit for the cigar lighter comprises a ground connection through the instrument panel 25, flange 26 and the yoke 27 extending one side of the car battery circuit to the socket 24 portion of the base 22 and the other pole of the circuit comprises a wire 63 from the battery connected to the contact sleeve 31 and rigidly secured thereto with a nut.

Now, of particular importance, the cigar lighter is, according to the present invention, arranged to prevent an excessive drain on the battery, and to lessen the amount of attention required from the driver. To this end, there is provided a novel catch for holding the igniting unit in energizing position and a novel circuit closer switching arrangement for automatically controlling the circuit between the movable contact stud 45 and the stationary main contact 32.

This special catch and thermostatically controlled switch is, according to the present invention, made as a unitary structure; that is, both are embodied together and it is thereby possible to effect a marked economy in the cost of manufacture, because fewer parts are required and a single assembly and adjustment takes care of both the catch and the thermostatically controlled switch. In its present preferred form this combined catch and thermostatically controlled switch comprises the main contact 32, made of bimetallic material in order to be responsive to thermal conditions of the latter. The fingers thereon are of narrow width and slightly bowed so that there is a marked tendency for these fingers to spread or to open up in the direction of the arrows 64 in Fig. 7 to the solid line position shown in the latter figure under the influence of heat.

These fingers are provided with hooks 65 at their outer ends which are adapted to engage with a bevel 66 on the front end of the main contact stud 45 and be forced apart thereby and then snapped in back of a shoulder 67 portion of the stud when the sliding sleeve is pushed toward the bottom of the socket into position shown in Fig. 2.

The contact finger hooks 65 thus positively lock the sliding sleeve 44 in the closed position and at the same time complete an electrical connection from the main contact sleeve 31, contact 32, and the stud 45 to the intermediate contact disk 43 and also through the ring 58 and stud 57 of the removable igniting unit 23 to complete the circuit to the heating coil 54 to energize the coil and bring it to incandescence.

As the heating coil 54 is brought to incandescence some of the heat is radiated from the front face of the coil against the inside of the disk 43 and follows through the ring and contact fingers 47. As the fingers are heated in this manner some of the heat follows through to the stud 57

2,140,811

45 and fixed contact fingers 34, and at the same time heats the air within the chamber formed by the socket 24 and shell 44, to cause the contact fingers to expand gradually in the direction of the arrows 64 (see Fig. 7) until the hooks 65 move clear or free of the shoulder 67 whereupon the spring 48 is free to again move the sliding sleeve 44 forwardly in the socket 24 until the movement is stopped by the lanced ear 50 engaging an end of the slot 51 as shown in Fig. 1. At the same time it pushes the removable igniting unit 23 forwardly in the socket and moves the contact 45 of the switch into open circuit or deenergizing position shown in Figs. 1, 5 and 7. As will be seen from Figs. 1 and 2 of the drawings, all of the elements of the switching means are carried entirely by one and the same part of the cigar lighter, herein illustrated as the holding device or base member, in coaxial alignment with one another and with the heating element. This enables the switch unit to be readily assembled within one of the parts of the cigar lighter.

It should also be noted that the particular form of switching unit and contacts provided therefor by the present invention have the very desirable advantage of making it unnecessary for the operator to twist, push, or in any special manner rotatably align the removable igniting unit 23 relative to the base 22 when returning the unit to the inoperative position on the base, or to do any involved twisting or aligning when it is desired to move the removable igniting unit into the operative or energizing position. It is merely necessary to put the plug 23 into the socket 24 when placing one within the other and merely necessary to push against the end of the igniting unit in order to move it to energizing position.

Normally the igniting unit 23 is in the position shown in Fig. 1 for the driver or other occupant of the car, after using the unit, merely slides it into the socket 24 until the cup 55 and ring 56 thereon engages with the spring contact fingers 47 of the slide 42. The pressure of the spring 48 on the sliding member serves as a stop or indication that the unit has been slid fully into the inoperative position. A spring plunger 68 is located in the plug body 52 to impinge against the bore of the socket 24 and prevent the igniting unit 23 from working out of the socket even though the car vibrates badly.

When it is desired to use the cigar lighter the driver merely grasps the knob which is an accessible portion of the igniter unit body 52 and pushes it and the movable contact-carrying member deeper into the socket against the pressure of the yielding spring 48 whereby the bevelled end 66 of the contact 45, as the contact-carrying member slides in the socket 24, engages with the hooks 65 to spread the fingers 34 until the hooks snap over the shoulder 67 as shown in Fig. 6, to lock the sliding unit in the back and switch closing position. Preferably a long finger 70 is lanced inwardly of the socket 24 with a raised portion adapted to engage and complete electrical connection between the socket 24 and igniting unit if the bore of the socket becomes worn considerably. The operator may then release his grip on the igniting unit and again use both hands for driving while the coil 54 is being heated tact-carrying element for holding the contacts in engagement; heat-responsive means for releasing the detent means to open the circuit; and

the shoulder portion 67 of the stud 45 until a release between the shoulder and hooks is effected and the igniting unit moved back into the inoperative position shown in Fig. 1 under the influence of the sliding sleeve 44 and spring 48. Thereafter, the driver pulls the lighter from the socket for use.

The light disk 62 at the outer end of the igniting unit 23 serves to transmit an incandescent glow from the heater coil and warn the operator that the lighter is in condition for use.

In Figs. 8 to 13 inclusive, there is shown a modified form of the present invention. The removable igniting unit 23 in this form of lighter is exactly the same as that shown in the first form of the invention. The holding device or base member 22', however, while like the base member 22 of the preferred form of the invention in many respects is provided with a different form of catch and switch unit 75 comprising a contact stud 45' made integral with a contact sleeve 31' and a sliding sleeve 44' is arranged to support and carry a yielding bimetallic contact member 32' with bowed fingers 34' and hooks 65'.

The fingers 34' and hooks 65' are normally in the closed position shown in Fig. 8, and are adapted to ride over a bevel 66' on the end of the contact sleeve 31' and hook into a groove 76 in back of the shoulder 67', as shown in Figs. 9 and 11. With this form of the present invention, as with the preferred form, it is merely necessary for the operator to push the igniting unit 23 longitudinally into the bore of a socket 24' portion of the base 22' until the hooks snap into the groove 76 whereupon current is conducted to the outer end of the heater coil 54 through the stud 77, contact fingers 43', and ring 56', the circuit being completed by the closed line between the panel 25, shell 24', ring 58, and stud 57 to the inner end of the coil.

When the switch 75 is closed and as the heater coil is brought to incandescence the spring contact fingers 34' and hooks 65' gradually open from the position shown in Fig. 11 in the direction of the arrow 64' and into the position shown in Fig. 12 until the hooks are free of the shoulder 67' portion of the groove 76, whereupon the sliding unit and hook carried thereby, under the influence of the spring 48, travel in the direction of the arrow 78 shown in Fig. 13 to move the igniting unit again into the inoperative position shown in Fig. 8.

This modified form of the present invention has the advantage of making it possible for the operator to manually manipulate the lighter to obtain a further degree of incandescence without waiting for the main contacts 32' to cool and resume their normal closed position, and to this end there is provided an auxiliary contact or flange 79 which contacts with the ends of the hook 65' when the igniter is pushed the full extent toward the back of the base member as shown in Fig. 14.

In Figs. 15 and 16 there is shown a further modified form of the present invention comprising a yielding contact member 32a, having fingers 34a similar to and arranged to ride over the bevel 66' and snap into grooves 76 in much the same manner as the contact member 32', shown in Figs. 10 and 11, or the contact members device with other like igniting units or holding devices.

5. A cigar lighter having two parts one con- 75

economy and it may be more advantageous than the bimetallic form in lighters which are brought to incandescence only slowly, or if the cigar lighter construction is such that there is a quick flow of heat from the heater coil to the yielding contact member; in other words, where it is desired to have a slowly responsive device.

Other variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent, is:—

1. In an electric cigar lighter, the combination of a base member; a unit removably supported by the base member; a heating coil on said unit; a circuit for said coil; a slide in said base member, and with the aforesaid unit, movable into operative and inoperative positions thereon; a shouldered stud and a hooked arm on said base and slide members respectively adapted to hold the slide and movable unit in the operative position and to close the circuit to the heating coil, said arm being adapted to move into an open and circuit-breaking position relative to the shouldered stud in response to the increase in temperature of the heating coil; and means for conducting current from the hooked arm to the heating coil when it is in the thermally opened condition and the movable unit is manually moved to operative position.

2. In an electric cigar lighter, the combination of a base member; a unit removably supported by the base member; a heating coil on said unit; a circuit for said coil; a slide in said base member, and with the aforesaid unit, movable into operative and inoperative positions thereon; a detent adapted to hold said slide in the operative position and to close the circuit to the heating coil, until the coil has been heated a predetermined extent whereupon it opens and allows return of the slide to inoperative position and opens the circuit; and means for effecting an auxiliary closing of the circuit through said detent while it is in its thermally open condition and the movable unit is manually maintained in operative position.

3. In an electric cigar lighter, the combination of a base member; a socket on the base member; a plug removably mounted in the socket and longitudinally movable in said socket to a shallow inoperative position and into a deep operative position; a heating coil on said removable plug; means adapted to move the removable plug in the socket from the deep operative position to the shallow inoperative position preparatory to removal and use; and thermal responsive means in axial alignment with the plug for restraining said last-named means until the heating coil reaches a predetermined temperature.

4. In an electric cigar lighter, the combination of a base member; a unit removably supported by the base member, and movable thereon into an operative and into an inoperative position; a heating coil on said unit; a circuit for said coil; a cooperating shouldered stud and hooked arm responsive to the temperature of the heating coil in said circuit, said arm being adapted to move into an open and circuit-breaking position relative to the shouldered stud in response to the increase in temperature of the heating coil; and means for conducting current from the hooked arm to the heating coil when said arm is in the thermally opened condition and the movable

unit is manually maintained in operative position.

5. In a cigar lighter of the removable type, holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit including the heating element to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit outwardly of the holder and partially ejecting the same when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element; and means for maintaining the igniting unit on the holder in partially ejected position against casual removal, the means last-mentioned including a spring-pressed plunger carried by and extending across the igniting unit.

6. In a cigar lighter of the removable type, holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit including the heating element to heat the latter for use; a spring actuated ejector placed under tension when the igniting unit is moved to circuit-closing position for moving the igniting unit outwardly of the holder; and means responsive to the temperature of the heating element and in axial alignment with the same for restraining said ejector and releasing the same when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element.

7. In a cigar lighter of the removable type, holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit including the heating element to heat the latter for use; and means, including means responsive to the temperature of the heating element and a spring actuated ejector, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said ejector being placed under tension when the igniting unit is moved to circuit-closing position, and having a locking member engaged by the temperature responsive means to be restrained by the latter until the heating element attains said predetermined temperature, said locking member and temperature responsive means being metallic and constituting part of the current supply circuit to the heating element and electrically disengaging each other at said predetermined temperature to open the circuit to the heating element.

8. In a cigar lighter of the removable type, holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit including the heating element to heat the latter for use; and means, including means responsive to the temperature of the heating element and a spring actuated ejector, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the

heating element, said ejector being placed under tension when the igniting unit is moved to circuit-closing position and having a locking member engaged by the temperature responsive means to be restrained by the latter until the heating element attains said predetermined temperature, said locking member and temperature responsive means being metallic and constituting part of the current supply circuit to the heating element and electrically disengaging each other at said predetermined temperature to open the circuit to the heating element, said locking member and temperature responsive means being shaped to be again electrically engaged without mechanically interlocking while the temperature responsive means is still in releasing position.

9. In a cigar lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit, including the heating element to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said temperature responsive means being metallic and constituting a part of the current supply circuit and being movable to open the circuit when the heating element attains said predetermined heat; and means for electrically engaging said temperature responsive means when in circuit-opening position to again close the circuit whereby the temperature of the heating element may be raised above said predetermined temperature.

10. In a cigar lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit, including the heating element to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said temperature responsive means being metallic and constituting a part of the current supply circuit and being movable to open the circuit when the heating element attains said predetermined heat; and means operative by movement of the igniting unit relative to the holder when the temperature responsive means is in circuit-opening position, to again close said circuit whereby the temperature of the heating element may be raised above said predetermined temperature.

11. In a cigar lighter, a holder; an igniting unit mounted on the holder and removable therefrom for use; a contact-carrying element mounted in the holder for sliding movement between limits; a contact on the holder; a contact on the contact-carrying element adapted to be moved into engagement with the contact on the holder by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holder to close an electrical circuit; detent means engaging said contact-carrying element for holding the contacts in engagement; heat-responsive means for releasing the detent means to open the circuit; and

means for normally urging the contact carried by the contact-carrying element into open-circuit position.

12. A replaceable heating element for the rear end of an igniting unit comprising a coil of resistance wire; a cup-shaped contact member around said coil into which the outer end of the coil is secured; another cup-shaped member axially but oppositely secured to the first with a layer of insulating material between their adjacent bases; means for clamping the cup-shaped members together, the inner end of said resistance wire being secured to said clamping means; screw threads fixedly secured on the outer surface of said second-mentioned cup-shaped member for cooperation with threads on the inside of the rear end of an igniting unit; and a peripheral electrical contact flange integral with the second-mentioned cup-shaped member substantially aligned with the base portion thereof and extending radially outwardly beyond the sides of both cup-shaped members.

13. An igniting unit for a cigar lighter comprising a hollow body portion of insulating material; a heating element on the rear end of said body and including a coil of resistance wire; a cup-shaped contact member around said coil and to which the outer end of the coil is secured; another cup-shaped member axially but oppositely secured to the first with a layer of insulating material between their bases; means clamping said cup-shaped members together, the inner end of said resistance wire being secured to said clamping means, the outer surface of the walls of said second-mentioned cup-shaped member being provided with screw threads which are fixedly secured thereto engaging cooperating screw threads on the inside of the rear end of said insulating body; and a peripheral electrical contact flange integral with the second-mentioned cup-shaped member substantially aligned with the base portion thereof extending radially outward beyond the sides of both cup-shaped members and contiguous with the rear end of the body, a friction device in front of the peripheral flange biased to a position radially outside of the body for cooperation with the inner surface of a holding device.

14. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removable from the holding device for use and having a heating element thereon, a pair of relatively movable members; means for normally urging the members apart; means carried by each of said members and cooperating to close a circuit through the heating element when moved into engagement with one another when said members are moved toward one another by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; and heat-responsive means for holding the movable members in closed-circuit position until the heating element has attained its desired usable heat, said members, the circuit-closing means carried thereby, the urging means, and the heat-responsive means being entirely carried by solely one and the same of the said two parts of the cigar lighter, so as to remain in predetermined operative relation relative to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices.

15. A cigar lighter having two parts one com-

stituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members; means for normally urging the members apart; cooperating circuit-closing means mutually carried by the members; manually operable means for moving said members toward one another into position to close a circuit through the heating element, said circuit-closing means including heat-responsive means in heat-receiving relation with the heating element for opening the circuit when the heating element has attained its desired usable heat; and auxiliary contact means to close said circuit when the heat-responsive means is in open-circuit position and said parts are held together manually.

16. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit longitudinally slidable in the holder and removable therefrom for use, said igniting unit having a heating element thereon, a pair of longitudinally movable elements for closing a circuit through the heating element; means for normally urging the elements into an open-circuit position; means for longitudinally moving one of the elements with respect to the other against said urging means and into closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; and heat-responsive latch means for maintaining the elements in closed-circuit position against the action of the urging means until the heating element has attained its desired heat, said movable elements, urging means, and heat-responsive latch being entirely carried by solely one and the same of the said two parts of the cigar lighter, so as to remain in predetermined operative relation relative to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices.

17. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a shouldered stud contact and a hook contact thereon relatively movable with respect to the shouldered stud and into engagement therewith to close an energizing circuit through the heating element; and manually operable means for moving the contacts into closed-circuit position, the hook contact being heat-responsive and in heat-receiving relation with the heating element and adapted to hold the circuit closed until the heating element has attained its desired heat.

18. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members, one of said members carrying a shouldered stud contact and the other a cooperable heat-responsive latch contact in longitudinal alignment with the shouldered stud contact; and means for moving by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device one of said members longitudinally of the part for causing the contacts to become engaged and close a circuit through

the heating element, the heat-responsive latch being disposed behind the shoulders of the stud for holding the movable members in circuit-closing position until the heating element has attained the desired usable heat.

19. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members, one of said members carrying a shouldered stud contact and the other a cooperable heat-responsive latch contact means operated by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device for moving one of said members longitudinally of the part for causing the contacts to become engaged and close a circuit through the heating element, the heat-responsive latch engaging the shoulders of the stud and holding the members in circuit-closing position until the heating element attains the desired heat and then releases the stud contact and opens the circuit; and auxiliary means to again close the circuit through the heating element upon said members being manually held in closed-circuit position while the heat-responsive latch is in thermally open-circuit position.

20. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of coaxially disposed relatively movable members; means carried by each of the members and cooperating to close a circuit through the heating element when moved relative to one another to a closed-circuit position; means normally urging the members into open-circuit position; and heat-responsive means in heat-receiving relation with said heating element, coaxial with the heating element and coaxial with the movable members, said heat-responsive means holding the movable members in circuit-closing position until the heating element has attained its desired usable heat.

21. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members, one of said members carrying a stud contact and the other a cooperable contact for claspingly engaging the stud contact and closing a circuit through the heating element when the contacts are moved into engagement with one another, the last-named contact being bimetallic and in heat-receiving relation with the heating element and moving to release the stud contact and open the circuit upon the heating element attaining the desired usable heat.

22. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members; means for normally urging the members apart; means including a shouldered contact on one of the members and a cooperating contact comprising yieldable jaws to grip the shouldered contact and engage the shoulder thereof on the other member cooperable to close a circuit through the heating element

when moved into engagement with one another when said members are moved toward one another by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device, said jaws being heat-responsive and disengaging and releasing said shouldered contact upon being heated to a predetermined heat.

23. A cigar lighter having two parts, one constituting a holding device and the other an igniting unit supported by the holding device but removable therefrom for use, said igniting unit having a heating element thereon and being adapted for use with said holding device or another like holding device, a switch including a pair of contacts, one being relatively movable with respect to the other to close a circuit through the heating element; means for normally urging the contacts into open-circuit position; means for moving the contacts into closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; detent means for maintaining the circuit closed against the action of the urging means; and heat-responsive means for releasing the contacts to the action of the urging means upon the heating element attaining its desired heat, said switch, detent means, urging means, and heat-responsive means being entirely carried by solely one and the same of said parts of the cigar lighter, so as to remain in predetermined operative relation relative to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices.

24. A cigar lighter having two completely separable parts, one being a holder and the other an igniting unit supported by the holder but removable therefrom for use and carrying a heating element; means for feeding energizing current to the heating element including cooperating contacts on the holder and igniting unit; a switch having relatively movable contacts, manually operated means for closing said switch; and thermostatically controlled means associated with said switch and in heat-receiving relation with the heating element for causing the switch to be opened when the heating element is ready for use and to remain open until the next operation of said manually operated means, said switch and thermostatically controlled means being entirely carried by solely one and the same of the said two parts of the cigar lighter, so as to remain in predetermined operative relation relative to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices.

25. A cigar lighter having two parts, one of said parts being a holding device and the other of said parts being an igniting unit supported by the holding device but removable therefrom for use, said igniting unit having a heating element thereon; cooperating contacts on the holding device

and the igniting unit to normally establish circuit connections between the said two parts; and a switch for closing an energizing circuit including said contacts and heating element, said switch being movable to closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device, thermostatically controlled and automatically restored to open-circuit position when the heating element has been heated for use, said switch being entirely carried by solely one and the same of the said two parts of the cigar lighter, so that all component parts of the switch remain in predetermined operative relation to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices.

26. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably mounted on the holding device for use and having a heating element thereon, one of said parts having a pair of coaxially disposed relatively movable members; means carried by each of the members and cooperating to close a circuit through the heating element when moved relative to one another to a closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; means normally urging the members into open-circuit position; means for holding the movable members against said urging means when moved into closed-circuit position; and heat-responsive means coaxial with the movable members for releasing the holding means upon the heating element attaining a desired usable heat whereby the urging means moves the members into open-circuit position and maintains the circuit open until it is again manually closed.

27. A cigar lighter having two parts, one constituting a holding device and the other an igniting unit supported by the holding device but removable therefrom for use said igniting unit having a heating element thereon and being adapted for use with said holding device or another like holding device, a switch including a pair of contacts, one being relatively movable with respect to the other to close a circuit through the heating element; means for normally urging the contacts into open-circuit position; means for moving the contacts into closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; detent means for maintaining the circuit closed against the action of the urging means; and heat-responsive means for releasing the contacts to the action of the urging means upon the heating element attaining its desired heat, said switch, detent means, urging means, and heat-responsive means being carried entirely and solely by the holding device.

JOSEPH H. COHEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,140,311.

December 13, 1938.

JOSEPH H. COHEN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, second column, line 57, claim 7, for "emperature" read temperature; page 1, first column, line 8, claim 22, for the word "heating" read heated; line 31, claim 23, before "parts" insert two; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 13th day of February, A.D. 1939.

Henry Van Arsdale.

(Seal)

Acting Commissioner of Patents.

DISCLAIMER

2,140,311.—*Joseph H. Cohen*, Bridgeport, Conn. CIGAR LIGHTER. Patent dated December 13, 1938. Disclaimer filed November 6, 1940, by the assignee, *Automatic Devices Corporation*.

Hereby enters this disclaimer to claims 3, 20, and 26 of the patent.
[Official Gazette December 3, 1940.]

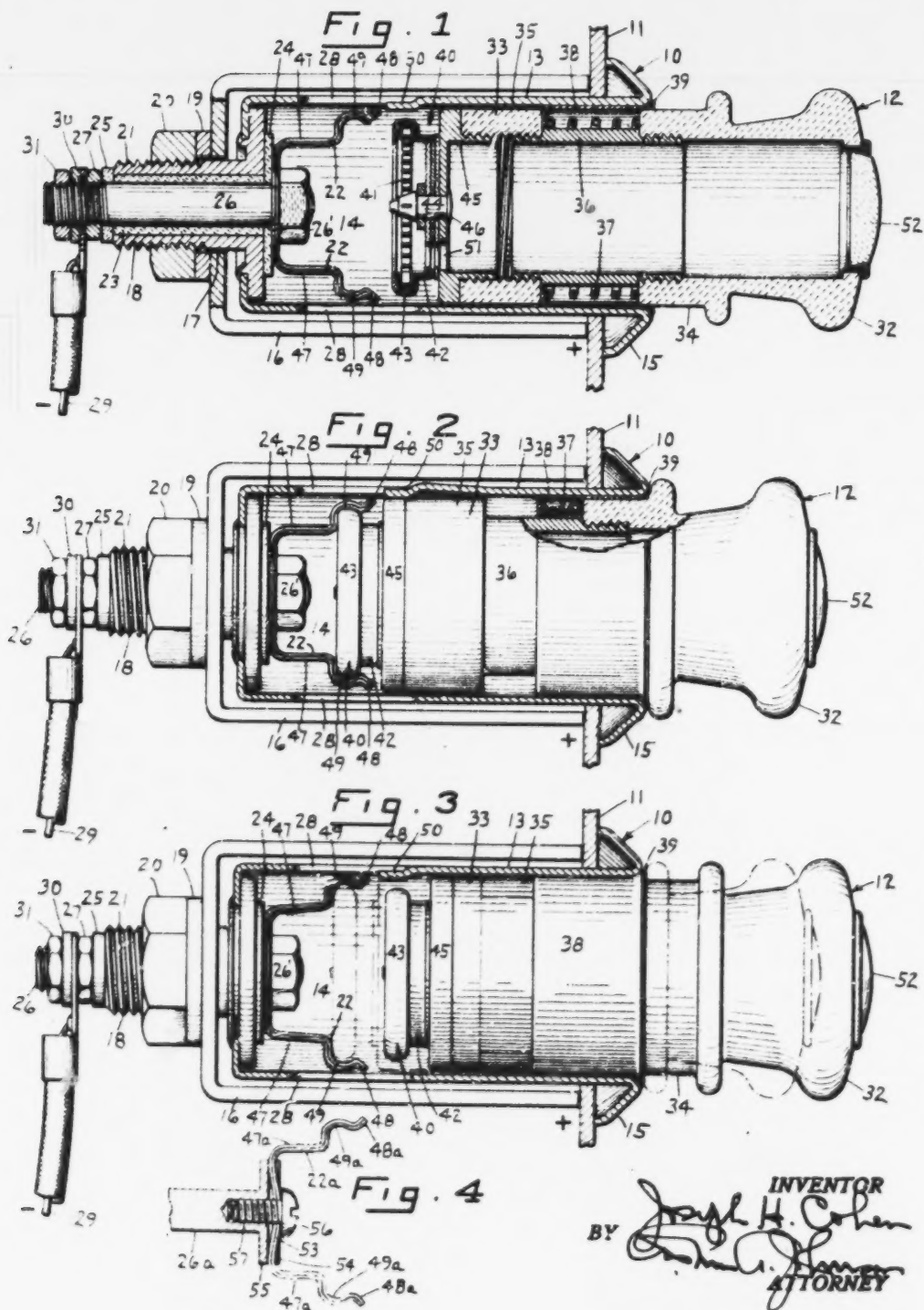
May 10, 1938.

J. H. COHEN

2,117,232

CIGAR LIGHTER

Filed March 29, 1933



DISCLAIMER

2,117,232.—Joseph H. Cohen, Bridgeport, Conn. CIGAR-LIGHTER. Patent dated May 10, 1938. Disclaimer filed March 19, 1941, by the assignee, Automatic Devices Corporation.

Hereby enters this disclaimer to claims 1, 2, 10, 11, 16, 17, and 18 of the patent.
[Official Gazette April 22, 1941.]

This invention relates to electric cigar-lighters, and more particularly, to devices of this character for use with automobiles, although it is applicable for home, office and other similar use. More specifically, it is an improvement over that form of automatically controlled cigar-lighter shown in my copending application Serial No. 624,193, filed July 23, 1932.

In my aforesaid application, I have disclosed a cigar-lighter with novel forms of structure adapted to normally support the removable igniting unit in an inoperative position in a socket and arranged to maintain a circuit controlling interponent in an energizing position until the igniting unit is heated a predetermined extent, whereupon thermostatic means releases the interponent and allows it to move the removable igniting unit back into the inoperative position in the socket again.

It is an object of the present invention to provide a cigar-lighter having many of the advantages of my aforesaid invention just described, but which will be simpler mechanically, more economical to manufacture and more positive and fool-proof in its action.

A feature of the present invention is the provision of a cigar-lighter which may be applied to its base with a straight and natural longitudinal movement and moved from an inoperative position to an operative or energizing position on the base with the same natural straight line movement. Also, a novel thermostatic control arranged to catch the removable igniter unit directly and hold it in energizing position for a predetermined period.

Another feature is the provision of a catch on the stationary member of the cigar-lighter having a direct mechanical and electrical connection with the heater element portion of the removable igniting unit to be advantageously heated directly by both radiation and convection.

A further feature is the provision of a novel arrangement for varying the degree of heat given to the resistance element and to compensate for wear of parts.

Yet another feature is the provision of a thermostatic detent adapted to catch and hold the removable igniting unit directly in an energizing position deep in a socket against spring pressure until properly heated and then release it for partial ejection from the socket for use, and for safety clearance from the feeder contacts. This feature of construction is also arranged to give a mechanical click or knock to audibly warn the

operator that the device is ready for use.

Other features and advantages will hereinafter appear.

In the drawing—

Figure 1 is a completely cross section view taken axially through the center of the device, with the removable igniting unit at the inoperative position in the stationary member.

Fig. 2 is a view similar to Fig. 1, with fewer parts in cross section, and with the igniting unit in the energized position.

Fig. 3 is a view similar to Fig. 2, but shows the catch in its expanded position and the removable igniting unit moved back again to its inoperative station in the socket.

Fig. 4 is a detail view of a modified form of thermostatic contact.

The cigar-lighter selected for illustrating the present invention is of the so-called sleeve type for use with automobiles and comprises a base member 10 for attachment to a panel 11 of an automobile, and a removable igniting unit 12 which is normally supported by the base member, but which may be mechanically and electrically disconnected for manual transportation within the car and for handling by various occupants therein for the purpose of lighting cigars, cigarettes and the like.

The base member 10 comprises a sleeve 13 forming a deep socket 14 adapted to pass through a suitable aperture in the instrument panel 11 until a flange 15 on the front end thereof engages with the instrument panel. It is held in this position on the panel by a U-shaped yoke 16 having an aperture 17 passed over a contact sleeve 18 at the bottom of the socket 14 where it is tightened in position and the flange 15 portion of the socket 14 drawn firmly into engagement with the panel 11 by a washer 19 and nut 20 run up and tightened on the thread 21 portion of the contact sleeve 18.

The U-shaped yoke, in addition to clamping the base member in place, serves through the washer 19, nut 20 and sleeve 18 to conduct grounded current to the socket 14 if the flange 15 seating on the front face of the panel 11 falls in this function.

The base member also supports and carries an insulated contact 22. This contact, in its present preferred form, is insulated from the socket by a collar 23 passing through a bore of the sleeve 13 and insulating washers 24 and 25 at the front and rear ends of the sleeve, and it is held in place on a shouldered stud 26 by a nut 26' and is then

passed through the insulating members just described where it is rigidly secured with a primary nut 27. This primary nut serves to locate and hold the contact 22 relative to the socket 14 so that the contact cannot rotate within the socket and inadvertently move away from clearance slots 28 in the side of the socket and harmfully engage with the sleeve 13 carrying an opposite pole of the circuit.

A feed wire 29 is connected to the stud 26 and is secured to the latter by a washer 30 and secondary nut 31. Thus, the base member is provided with members (the socket 14 and contact 22) terminating both sides of a car circuit which are insulated from each other.

The removable igniting unit 12 comprises a knob or handle 32, and a plunger section 33 adapted to slidingly fit into the socket 14 and support the igniting unit therein. This plunger section comprises a shoulder 34 on the knob 32 and an aligning sleeve 35 spaced forwardly therefrom by a threaded and shouldered collar 36. It should be particularly noted that this structure forms a support for a spring 37 and sleeve 38, the latter being provided with a flange 39 adapted to engage the front of the socket 14 and limit movement into the socket while the spring 37 normally urges the knob section of the igniting unit rearwardly with respect to the collar in order to prevent the igniting unit from engaging with the fixed contact in the base member if the unit is initially mounted into the socket and yet adapted to yield and permit the unit to be moved forwardly by conscious effort.

The igniting unit 12 is completed with a heater unit 40 preferably having a threaded connection with the auxiliary sleeve 35 which is made of insulation in order to properly insulate the heater unit from electrical connection with the base member 10 and with the spacing sleeve 36 portion of the igniting unit. This heater unit comprises a resistance element 41 in the form of a spirally wound band supported in and connected at its outer end to a metal cup 42 where it is secured in place with an overlapping ring 43, and is at its other end supported by and connected to a centrally disposed stud 44 which passes through the cup 42 and a threaded sleeve 45 and rigidly secured in place by the headed section 46 thereof. The stud 44 provides an electrical connection between the threaded sleeve 45 and the inner end of the spirally wound resistance element, but is insulated from the cup 42 and other end of the resistance element by three washers best seen in Fig. 1.

Now, it should be particularly noted that the stationary contact 22 on the base member 10 is made of bimetallic strips so as to be thermally responsive and expand upon heating, and is arranged to normally embrace the heater unit and thereby hold the igniting unit in the socket 14. To this end it is preferably provided with two fingers 47 at opposite sides of the center and spaced wide apart. Also, the fingers are of substantial length in order to provide considerable resiliency. These fingers are at their outer ends provided with a bevel 48 adapted to be engaged by the collar 43 on the heating unit 40, and are provided with a concave notch 49 conforming substantially with the contour of the collar 43. The shape of these parts and the relationship between the fingers 47 and collar section 43 of the heating unit 40 is such that the fingers are first spread apart by the collar as the igniting unit is moved rearwardly in the

socket 14, until the concave notches snap over the collar and hold the igniting unit in the back position within the socket as shown in Fig. 2, the resiliency of the contact fingers 47 and holding strength of the concave notches being stronger than the pressure of the compressed spring 37 while the igniting unit is initially in the back position.

In this back position current is transmitted from the ungrounded stationary contact 22 through the collar 43 to the outer end of the resistance element 41 while the grounded circuit in the base member is transmitted to the resistance element through a spring finger 50, preferably lanced from the side of the sleeve 13, engaging the outer wall of the threaded sleeve 45 and through the latter and the stud 44 passed to the inner end of the resistance element, whereupon the resistance element is gradually brought to incandescence for the purpose of cigar and cigarette lighting.

As the resistance element is brought to incandescence, heat is passed to the collar 43, thence to the ends of the fingers 47 for direct mechanical transmission of heat and is also radiated substantially against the fingers whereupon the thermally responsive bimetallic strips, comprising the contact 22, begin to expand and gradually carry the concave notches 49 on the arms 47 out of engagement with the collar 43 portion of the igniting unit, the parts being so proportioned that the contact 22, when cold, catches and holds the igniting unit 12 back into the energizing position until the resistance element is brought to a white heat or to another predetermined degree of incandescence. Thereafter, the contacts and the catch formed thereby releases its hold upon the igniting unit and the spring 37 and sleeve 38 assembly on the igniting unit quickly moves the latter to the back inoperative position shown in Fig. 3.

The degree of incandescence may also be indicated to an operator by the provision of several aligned holes in the cup 42, insulating washers and threaded sleeve 45, as shown at 51 in Fig. 1, which permit light rays to pass through the bore of the igniting unit and rearwardly through the disk 52 which is preferably made of catalin or other light ray conducting material.

Operation of the device is as follows:

The removable igniting unit 12 is normally moved into the socket 14 to the inoperative position shown in Fig. 1 where the flange 39 on the spring sleeve 38 engages the flange 15 of the socket. The parts are so arranged that the unit moves easily into this position and special effort is required to move it deeper into the socket after the flange engages the shoulder. Thus, the operator releases the removable igniting unit after it is properly located in the socket in the normal rest or inoperative position.

When it is desired to energize the removable igniting unit, the operator merely presses the igniting unit deeper into the socket 14 in a straight line direction and without rotation or special aligning effort against the pressure of the spring 37 until the collar 43 on the heating element 40 spreads the ends of the two spring contact fingers 47 apart and deep enough so that the concave notches 49 snap over the collar to hold the igniting unit in the back or operative position deep in the socket for energization by the contacts 22 and 50 cooperating with the collar 43 and threaded sleeve 45. The operator may, with the present invention, immedi-

ately take his hand away from the igniting unit again and grasp the wheel, gear shift lever, or other part of the car again for efficient and regular operation of the car, rather than holding the igniting unit in place as with the usual type of lighter while the resistance element 41 is being heated to incandescence for use.

At the same time, the heating unit 40, by convection and radiation as hereinbefore described, heats the thermally responsive contact 22 and causes the two arms 47 to spread apart slowly as the heating unit is being brought to the proper degree of incandescence. When properly heated, the notches 41 clear the collar 43 and allows the spring 37 to push the igniting unit outwardly with respect to the socket 14 and thereby hold the contacts on the heating unit 40 clear of the feeder contacts 22 and 50 on the base 10. In this latter movement, there is a snap noise as the flange on the spring sleeve 38 engages the back wall of the auxiliary sleeve 35 which will be heard by the operator to warn him that the removable igniting unit is satisfactorily heated and ready for use and that it should be used without delay while the heating unit is incandescent.

Thus, the present invention provides a simple automatic control, which, in effect, grasps and holds the removable igniting unit itself in energizing position until it is properly heated and thereupon releases it and automatically moves it out of electrical connection after it is properly heated into a position of safety with respect to the feeder contacts on the base, thereby minimizing the possibility of excessive drain on the battery or other source of current. The direct mechanical connection between the heating unit and the bimetallic contact provides an economical structure, and, more particularly, provides a construction which is direct and highly responsive to the heating of the resistance element. Furthermore, the contact 22 which forms the catch receives heat directly by convection and radiation from the resistance element.

In Fig. 4 there is shown a modified form of combined catch and contact 22a comprising a bimetallic strip which is substantially similar to the preferred form shown in Figs. 1 to 3. It is, however, provided with a bowed base 53 adapted to fit into a slot 54 across the head 55 of a bolt 26a in order to prevent relative turning and is held on the bolt by a screw 56 passing through the base 53 and having a threaded connection 57 with the bolt. This contact is also provided with a pair of arms 47a having bevels 48a and concave notches 49a to receive the removable igniting unit 12 in much the same manner as the first form of contact hereinbefore described. However, this modified form of contact has the advantage of making it possible to easily and quickly change the pressure of the catch on the removable igniting unit and thereby increase or decrease the degree of incandescence before release is effected by simply tightening the screw 56 and thereby flattening the bowed base of the contact and at the same time moving the fingers 47a toward each other to increase the pressure and by loosening the screw allowing the bowed section to move outwardly again while the fingers likewise spread outwardly in order to decrease the pressure of the catch on the igniting unit and thereby effect a quicker release. This adjustment is particularly advantageous in order to compensate for any stretch or wear of the contact from continuous use or from constant heating and cooling. The adjustment may be easily effected

by simply inserting a screw driver into the socket and turning the screw 56 in the desired location.

Both forms of the invention have the advantage of partially ejecting the igniting unit from the base into a more convenient position for complete removal, and, at the same time, the partially ejected relative location of these parts provides an auxiliary warning to the operator that the igniting unit is in condition for use if he fails to hear the mechanical click of the igniting unit as it is ejected to the back position or if he hears some extraneous click which he thinks is the cigar-lighter, for in the latter situation the igniting unit would still be in the deep position and visually indicate to the operator that it is not yet properly heated.

If preferred, the contact member 22 or 22a may be made with but a single finger 47 or 47a respectively by omitting the finger as shown with dot-and-dash lines in Fig. 4.

The broader aspects of the invention herein disclosed are described and claimed in my co-pending applications Serial No. 624,193, filed July 23, 1932, and a division thereof, Serial No. 118,838, filed January 2, 1937.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent, is:—

1. In an electric cigar-lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally manually slidable in said socket from a shallow inoperative to a deep operative position; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position; cooperating contacts on the igniting unit and the base member respectively, adapted to engage when the igniting unit is in said deep operable position and disengage when in said shallow inoperative position, one of the contacts on the base member extending into the path of movement of one of the contacts on the igniting unit so that said contacts are maintained in good electrical engagement by the tendency of the igniting unit to move toward inoperative position; and a spring detent adapted to catch and releasably hold the igniting unit deep in the socket in the operative position against the pressure of said yielding means and as a result of said longitudinal movement of the igniting unit to said operative position.

2. In an electric cigar-lighter, the combination of a base member; a socket on the base member; a removable plug manually longitudinally slidable in said socket to a shallow inoperative position and into a deep operative position; a heating coil on said removable plug; yielding means normally urging said removable plug longitudinally from said deep operative position to said shallow inoperative position; cooperating contacts on the igniting unit and the base member respectively, adapted to engage when the igniting unit is in said deep operable position and disengage when in said shallow inoperative position, one of the contacts on the base member extending into the path of movement of one of the contacts on the igniting unit so that said contacts are maintained in good electrical engagement by the tendency of the igniting unit to move toward inoperative position; and a thermally responsive catch adapted to hold said plug in the deep operative position normally and to release said plug when

said heating coil is energized a predetermined extent, whereupon said yielding means ejects said plug longitudinally from the deep operative position to the shallow inoperative position, said catch being rendered operative as a result of the longitudinal movement of the igniting unit into said operative position.

3. In an electric cigar-lighter, the combination of a base member; a socket in the base member; a removable igniting unit including a spacing sleeve with a knob and collar secured thereto forming shoulders at opposite ends thereof; and yielding means, including a spring and sleeve on said spacing collar between the two shoulders, forming a support for the removable igniting unit in said socket normally in a back inoperative position and yieldable to permit forced travel of the igniting unit deeper into the socket to an operative position.

4. In an electric cigar-lighter, the combination of a base member; a socket in the base member; an escutcheon flange on the base member; a removable igniting unit including a spacing sleeve with a knob and collar secured thereto and forming shoulders at opposite ends thereof; and yielding means, including a spring and sleeve having a flange engaging the escutcheon flange on said spacing collar between the two shoulders, forming a support for the igniting unit in said socket normally in a back inoperative position and yieldable to permit forced travel of the movable igniting unit deeper into the socket to an operative position.

5. In an electric cigar-lighter, the combination of a base member; a removable plug supported by said base member; a heating element on said plug; and a thermostatic catch on the base member directly engaging the heating element for locking the plug in the base member until the heating element is heated a predetermined extent.

6. In an electric cigar-lighter, the combination of a stationary base member; a plug adapted to be removably supported in said base; a heating element on said plug; yielding means normally urging the plug member away from the base member; and a thermostatic catch on the base member directly engaging the heating element adapted to lock the plug member in the base member against the pressure of the yielding means and adapted to release and allow the plug to be moved away from the base member under the influence of the yielding means when the heating element is heated a predetermined extent.

7. In an electric cigar-lighter, the combination of a base member; a removable plug supported on the base member and movable longitudinally thereon into operative and inoperative positions; an electrical heating coil on said plug; a ferrule surrounding the coil, and a thermostatically controlled catch for locking said plug in its operative position longitudinally and adapted to release automatically so that the plug may return to its inoperative position longitudinally when said coil is heated a predetermined extent, said catch comprising a bimetallic detent adapted to snap over the ferrule and thereby lock the plug in operative position.

8. In an electric cigar-lighter, the combination of a base member; a socket in the base member; a plurality of contacts of opposite polarity on the base member; a removable igniting unit; a plurality of contacts of opposite polarity on the igniting unit, said igniting unit having a free slid-

ing fit into a shallow inoperative position in the socket where the plurality of contacts on the said igniting unit are entirely free of the said contacts on the base member; yielding means adapted to permit forced movement of the igniting unit deeper into said socket to an energizing position where said plurality of contacts on the base member and said plurality of contacts on the igniting unit are brought into cooperating engagement; and a thermostatic catch for holding said igniting unit in the energizing position for a predetermined period of time.

9. In an electric cigar-lighter, the combination of a base member; a socket in the base member; a stationary contact in the base member; a combined thermostatic catch and contact in the base member; a removable igniting unit; a plurality of contacts on the igniting unit; a stop on the igniting unit for limiting free sliding movement of the igniting unit into a shallow position in the socket, where the two contacts on the latter are entirely free of the two contacts on the base member; and yielding means necessitating a forced travel of the igniting unit deeper into the socket into an energizing position where the contacts on the base member and on the igniting unit cooperate, and where the combined catch and contact on the base member holds the igniting unit in the energizing position until the igniting unit is properly heated.

10. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidable in said socket to a shallow inoperative position and a deep operative position; a heater element carried by said plug; a pair of contacts associated with the heater element; a plain contact on the base member engaging one of the contacts of the heater element; and a bimetallic combined contact and catch adapted to engage the other contact of the heater element in close proximity thereof so as to be heated directly by radiation and conduction from the heater element.

11. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidable in said socket to a shallow inoperative position and a deep operative position; a heater element carried by said plug; a pair of contacts associated with the heater coil; a plain contact on the base member engaging one of the contacts of the heater element; and a contact having a bimetallic spring arm with a notch adapted to catch and hold the other contact on the heater element and in close proximity thereof so as to be influenced directly by radiation and conduction of heat from the heater element.

12. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidably movable in said socket to a shallow inoperative position and a deep operative position; means for partially ejecting the plug from the socket; a heater element carried by said plug; a pair of contacts associated with the heater coil; a plain contact on the base member engaging one of the contacts of the heater coil; a bimetallic catch and contact including a plurality of yielding arms thermally influenced by said heater element; notches in said arms adapted to catch and hold said removable plug in the deep operative position of the socket; and means for varying the spacing between said arms and the pressure with which they catch the removable plug, in order to control the degree of incandescence of the heater coil prior to release of

the notches from the heater element and the ejection of the removable plug.

13. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidably movable in said socket to a shallow inoperative position and a deep operative position; means for partially ejecting the plug from the socket; a heater element carried by said plug; a pair of contacts associated with the heater coil; a plain contact on the base member engaging one of the contacts of the heater coil; a bimetallic contact for engaging the other contact on the heater coil and being thermally responsive thereto including an arm with a notch adapted to engage and hold said removable plug in the deep operative position; and means for varying the pressure with which said arm engages and holds said removable plug to effect a predetermined energization of the heater coil.

14. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidably movable in said socket to a shallow inoperative position and a deep operative position; means for partially ejecting the plug from the socket; a heater element carried by said plug; a pair of contacts associated with the heater coil; a plain contact on the base member engaging one of the contacts of the heater coil; a bimetallic contact for engaging the other contact on the heater coil and being thermally responsive thereto including an arm with a notch adapted to engage and hold said removable plug in the deep operative position; a bowed base on said bimetallic contact; and screw means for flattening said bowed base and thereby varying the pressure with which said arm engages and holds said removable plug to effect a predetermined energization of the heater coil.

15. In an electric cigar lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally slidable in the socket into a shallow inoperative position and a deep operative position; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position; a heating element on the inner end of the igniting unit and having a projecting flange; and a spring detent adapted to engage said flange on the heating element and releasably holding the latter and the igniting unit deep in the socket into operative position against pressure of said yielding means and as a result of said longitudinal movement of the igniting unit to said operative position.

16. In an electric cigar-lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally manually slidable in said socket from a shallow inoperative to a deep operative position; a heating element carried by said igniting unit; cooperating contacts on the base and igniting unit respectively for energizing said heating element only when the igniting unit is in said deep operative position, one of the contacts on the base member extending into the path of movement of one of the contacts on the igniting unit; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position and deenergizing the heating element, said forcing means by tending to move the igniting unit toward shallow position causing said cooperating contacts to maintain good electrical engagement when the igniting unit is in energizing position; and means operable to engage and detain the igniting unit in its deep oper-

ative position against the pressure of said yielding means when the said unit is manually moved to said position while it is below an intended temperature and also operable to nondetaining relation to said unit when the latter is heated to said temperature so as then to allow said yielding means to move the unit to its shallow inoperative position.

17. A lighter as defined in claim 16, wherein the means last-mentioned includes a thermostat.

18. In an electric cigar-lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally manually slidable in said socket from a shallow inoperative to a deep operative position; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position; and means operable to engage and detain the igniting unit in its deep operative position against the pressure of said yielding means when the said unit is manually moved to said position while it is below an intended temperature and also operable to nondetaining relation to said unit when the latter is heated to said temperature so as then to allow said yielding means to move the unit to its shallow inoperative position, the means operable to engage the igniting unit including a metallic thermostat itself shaped to provide a spring catch engageable with said unit when the unit is manually moved to deep operative position and the unit is below said intended temperature.

19. In an electric cigar-lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally manually slidable in said socket from a shallow inoperative to a deep operative position; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position; and means operable to engage and detain the igniting unit in its deep operative position against the pressure of said yielding means when the said unit is manually moved to said position while it is below an intended temperature and also operable to nondetaining relation to said unit when the latter is heated to said temperature so as then to allow said yielding means to move the unit to its shallow inoperative position, the means operable to engage the igniting unit including a thermostat, the igniting unit including a carrier for the heating element thereof, and said carrier being engaged by the means which includes the thermostat when said means detains the igniting unit in its deep operative position.

20. In a cigar-lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit, including the heating element, to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said temperature responsive means being metallic and constituting a part of the current supply circuit including an electric current supply contact having a surface to normally engage and disengage the heating element directly and being movable to open the circuit when the heating element attains said predetermined heat; and means for electrically

connecting said heating element to said temperature responsive means when the latter is in circuit-opening position to again close the circuit whereby the temperature of the heating element may be raised above said predetermined temperature.

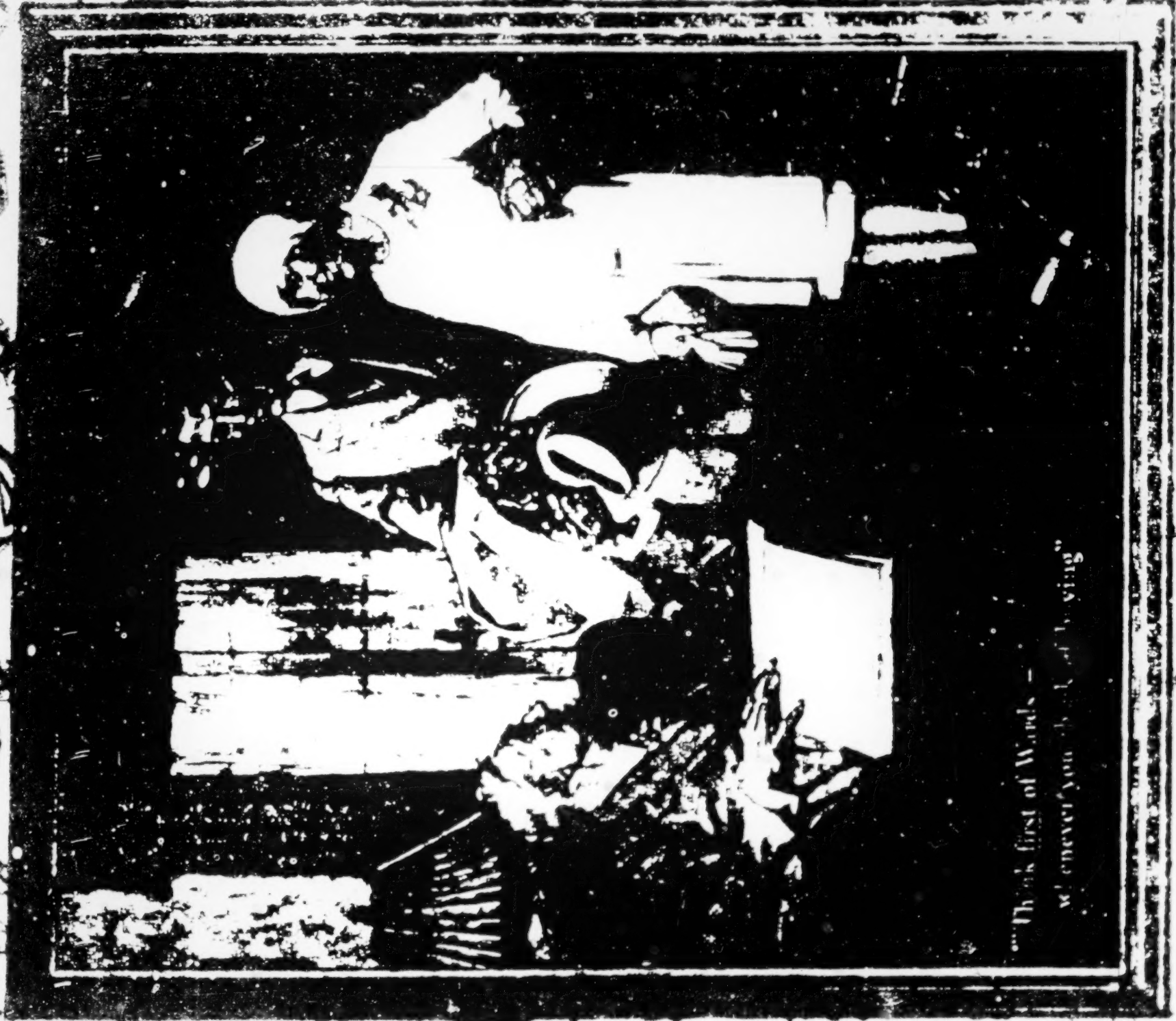
21. In a cigar-lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to movement of the igniting unit and heating element on the holder from a normal open circuit position to close a current supply circuit, including the heating element, to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit on the holder to normal position when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said temperature responsive means being metallic, engaging directly the heating element and constituting a part of the current supply circuit and being movable to open the circuit when the heating element attains said predetermined heat; and means for electrically connecting said heating element to said temperature responsive means when the latter is in circuit-opening position to again close the circuit whereby the temperature of the heating element may be raised above said predetermined temperature.

22. In a cigar lighter, the combination of a

socket; an igniting unit mounted in said socket for complete removal and replacement; a heating element on the inner end of said igniting unit and including a resistance wire and an annular contact connected thereto and closely thermally encircling said resistance wire; a contact finger in the socket to directly engage the annular contact on the heating element and be heated thereby; and means completing an energizing circuit through said resistance wire, said contact finger being heat-responsive so as to electrically disengage said annular contact when the said resistance wire is brought to a desired degree of incandescence.

23. In a cigar lighter, the combination of a socket; an igniting unit mounted in said socket for complete removal and replacement; a heating element on the inner end of said igniting unit and including a resistance wire and an annular contact connected thereto and closely thermally encircling said resistance wire; a contact finger in the socket to directly engage the annular contact on the heating element and be heated thereby; and means completing an energizing circuit through said resistance wire, said contact finger being bimetallic and heat-responsive so as to electrically disengage said annular contact when the said resistance wire is brought to a desired degree of incandescence.

JOSEPH H. COHEN. 30



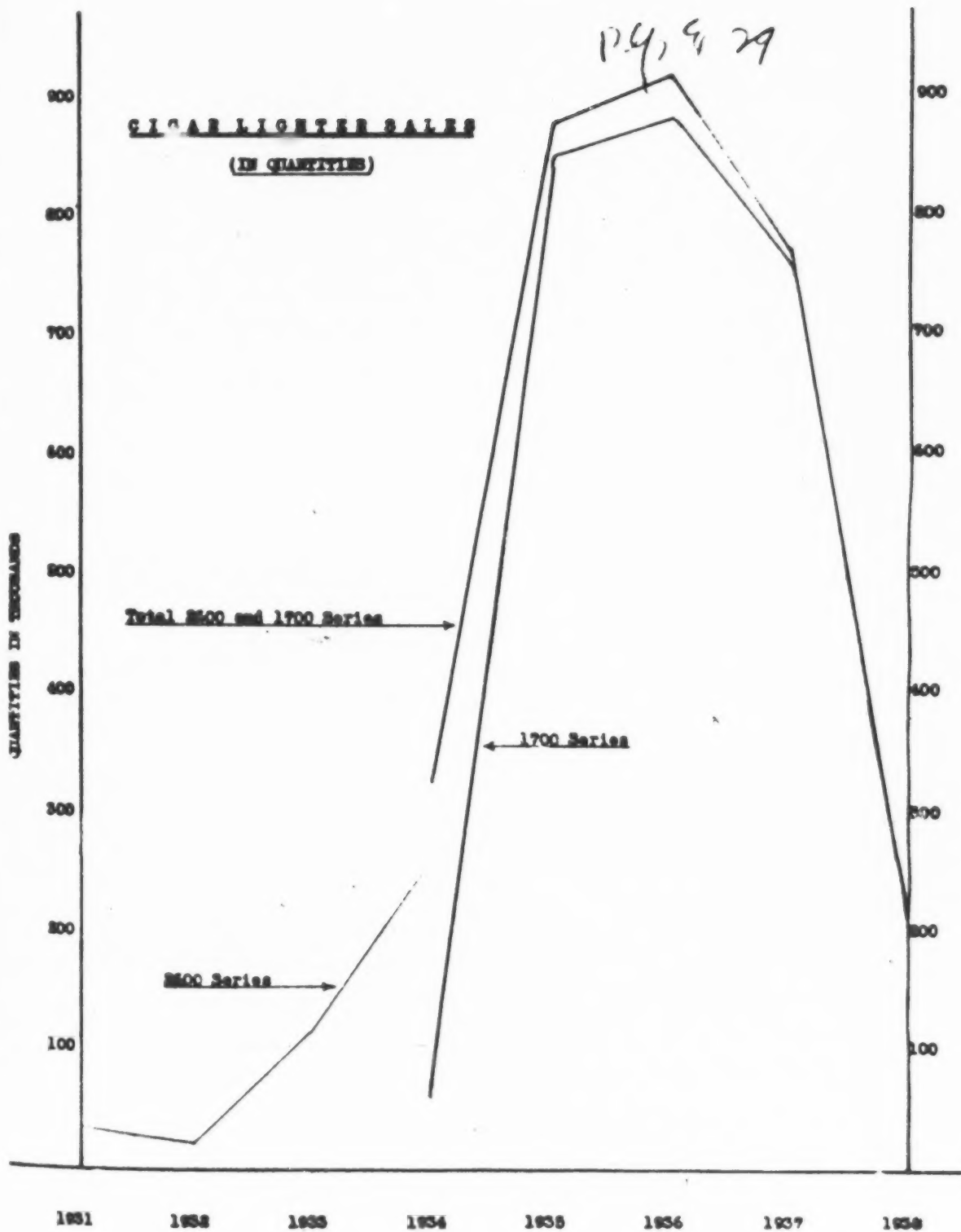
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285,200 COMPLETE SPECIFICATION

1 SHEET

Fig. 1.

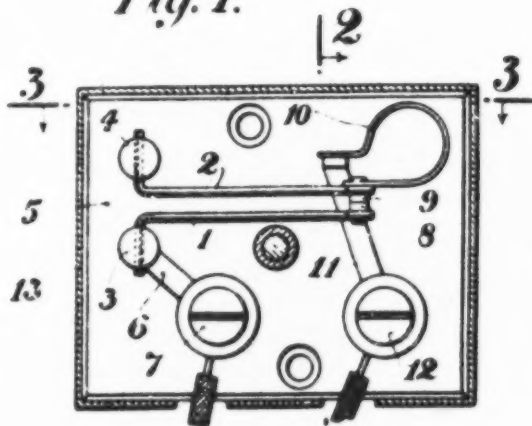


Fig. 2.

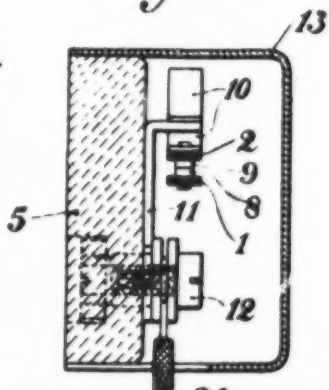


Fig. 3.

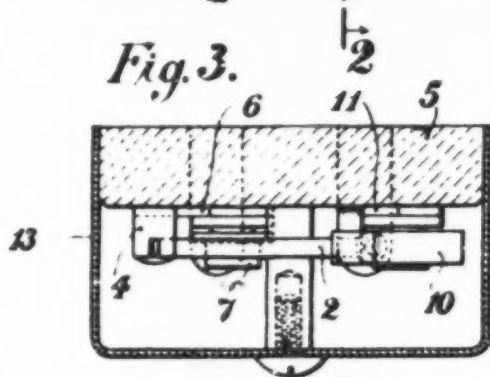


Fig. 4.

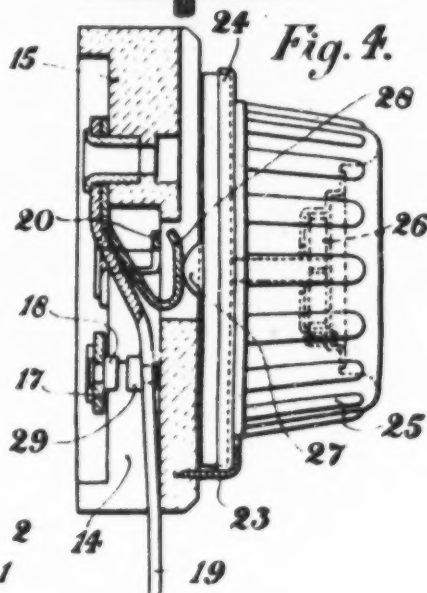


Fig. 5.

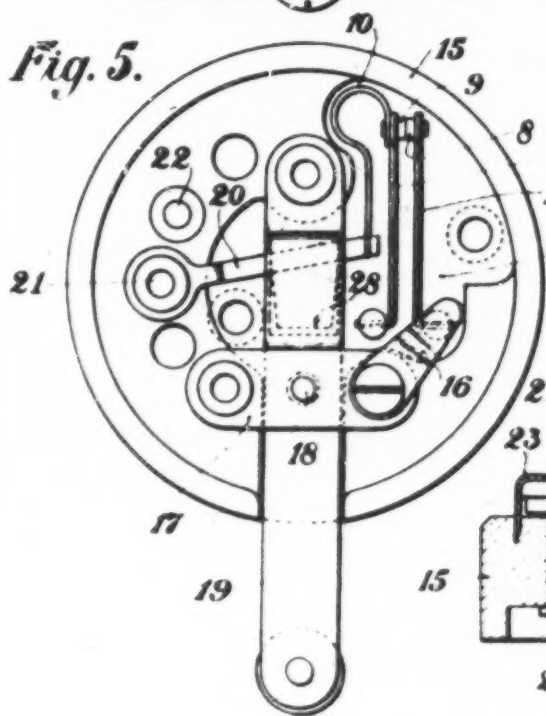
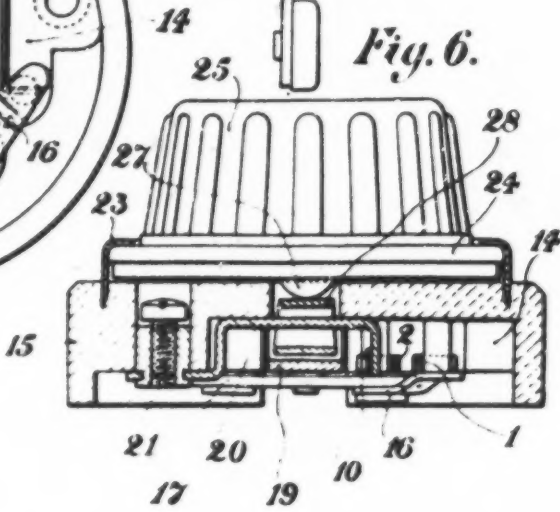


Fig. 6.



This Drawing is a reproduction of the Original on a reduced scale.

PATENT SPECIFICATION



Application Date: Dec. 14, 1926. No. 31,643/26.

" " May 31, 1927. No. 14,563 27.

One Complete Left: June 2, 1927.

Complete Accepted: Feb. 16, 1928.

285,200

PROVISIONAL SPECIFICATION.

No. 31,643, A.D. 1926.

Automatic Cut-out for Electric Cigar and Cigarette Lighter.

We, S. SMITH AND SONS (MOTOR ACCESSORIES) LIMITED, a company registered under the laws of Great Britain, of Central Works, Edgware Road, Cricklewood, London, N.W. 2, FREDERICK WILLIAM MILLER, a British subject, of "Hazeldell", Aylesbury Road, Hockley Heath, Warwickshire, and FREDERICK MILLER, a British subject, of "Hazeldell", Aylesbury Road, Hockley Heath, Warwickshire, do hereby declare the nature of this invention to be as follows:—

This invention is for automatically switching off the electric current running through the resistance of a cigar or cigarette lighter and preventing the resistance from fusing, which is usually caused through holding down the switch too long. Our method of preventing burning out the resistance is as follows. On base plate of lighter is the positive terminal stud and in contact with this

stud is the end of a strip of thermostatic metal which allows current to pass through this metal to another stud which carries the current through the resistance filament to the negative terminal. As the resistance filament reaches the maximum heat, the actual heat from the resistance causes the thermostatic metal to expand or contract and so breaks the circuit and can be regulated either to keep the lighter at an even heat or to automatically glow and cool.

Dated this 13th day of December, 1926.

S. SMITH & SONS (MOTOR ACCESSORIES) LIMITED,

ALEXANDER SMITH,
SAMUEL SMITH,

Directors,

H. WARWICK,

Secretary.

F. W. MILLER,
F. MILLER.

PROVISIONAL SPECIFICATION.

No. 14,563, A.D. 1927.

Improvements relating to Electric Cigar, Cigarette and like Lighters.

We, S. SMITH AND SONS (MOTOR ACCESSORIES) LIMITED, a company registered under the laws of Great Britain, of Central Works, Edgware Road, Cricklewood, London, N.W. 2, FREDERICK WILLIAM MILLER, British subject, and FREDERICK MILLER, British subject, both of 68, Nansen Road, Sparkhill, Birmingham, do hereby declare the nature of this invention to be as follows:—

This invention relates to electric cigar, cigarette, pipe and like lighters of the resistance type, such as are used in motor-cars and other vehicles or in other places for the convenience of smokers.

[Price 1/-]

With lighters of the above type, if the switch is held closed for too long, the high resistance wire or filament becomes unduly heated and fuses, thus putting the lighter out of action.

The object of the present invention is to obviate this disadvantage appertaining to resistance lighters, and to provide, in conjunction with the lighter, an automatic cut-out or protective device which will prevent the fusing of the resistance wire and which may be arranged to maintain the lighter at a substantially uniform glowing temperature no matter how long the switch may remain closed.

According to the invention, a thermos-

statically-controlled switch or make-and-break device is included in the lighter circuit, the controlling thermostat being arranged to be influenced by the heating effect of the current flowing or by the temperature of the heater so as to break the circuit before the fusing temperature of the resistance wire is reached. Conveniently the current flows through the thermostat, which carries or operates a switch contact in the circuit, so that it is heated by the current and breaks the circuit. As the thermostat cools it again closes the circuit and so long as the lighter switch remains closed, the thermostat repeatedly opens and closes the circuit, thereby avoiding overheating of the resistance wire, which, in this manner, may be arranged to be maintained at a substantially uniform, or at a variable, glow, as desired. Preferably, a second thermostat element is employed to compensate for the effect of variations in the temperature of the atmosphere in which the main or controlling thermostat is situated due to external influences, such as the heat of the engine or climatic conditions. Without this compensating thermostat variations in the temperature of the surrounding atmosphere, due to causes other than the temperature of the heater, would possibly influence the main thermostat element and cause the circuit to be opened when the lighter was not in use, or cause the contact to be opened too far when the current flowed through the said element. The said compensating thermostat is arranged to carry the contact with which the contact controlled by the main thermostat co-operates, and is influenced by external temperature conditions to the same extent as the main thermostat, so that any variation in such temperature conditions will affect both contacts equally.

In carrying out the invention in a form suitable for use with an existing lighter, the cut-out device comprises two parallel bi-metallic thermostatic strips preferably composed of nickel and brass, one strip constituting a main controlling thermostat and the other functioning as a compensating thermostat, as hereinafter described. These strips are fixed at one end to suitable metallic studs or posts secured upon a base plate of insulating material and the stud or post carrying the main thermostatic strip is connected by a suitable conductor to a terminal on the said base plate said terminal being adapted to be connected in the electric circuit of the lighter. The said strip carries at its free end a contact point of any suitable material, such as nickel, and this contact point normally engages a similar

contact point carried upon the free end of the other or compensating strip. The said free end of this latter strip is riveted or otherwise directly connected to one end of a light flexible bow spring, the other end of which is fixed to a conducting strip or bar connected to a second terminal on the base plate, the said terminal being connected to the lighter circuit. The bow spring acts as a flexible conductor for the current and also assists normally to maintain the contact points together.

When the lighter switch is closed the current flows from the one terminal through the main thermostatic strip, traverses the closed contact points, and passes through the bow spring and conducting bar to the other terminal. The said main thermostatic strip is made of such a resistance that when the resistance filament of the lighter attains a bright red glow, and before the fusing point of the said filament is reached, the heating effect of the current passing through the strip causes the latter to deflect away from the compensating strip and the contact points to separate, thus breaking the circuit. The main strip thus commences to cool and returns to its former position, the contact points coming together and (if the main lighter switch remains closed) again completing the circuit, the operation being repeated so long as the said main lighter switch remains closed. It can be arranged for the interval between the breaking and re-closing of the circuit to be very short so that the lighter will be maintained at a substantially uniform glow, or the interval can be longer so that the lighter will alternately glow and cool.

The cut-out may be enclosed by a detachable cover suitably secured to the base plate.

The compensating thermostatic strip has a similar deflection characteristic to the main strip, so that if the temperature of the surrounding atmosphere varies, due to the heat of the engine or by reason of climatic conditions, both the said compensating strip and the main thermostatic strip, will move together and to the same extent, so that the contact points will remain closed until a current passes through the main strip. Thus the opening of the circuit is dependent solely upon the heating effect of the current. In a modification, however, it may be arranged for the circuit-controlling thermostatic element to be placed close to the resistance filament so as to be influenced by the heat radiated therefrom in order to open the circuit before the fusing point of the filament is reached. In this case, however, the compensating thermostat, while moving in the same direction, would have a

different deflection characteristic from the main thermostat, so that the contacts would remain together during small variations in temperature due to engine heat or atmospheric conditions, but would separate under the influence of the greater increase of temperature due to radiation from the lighter.

Instead of the cut-out being in the form of a separate fitting for use with existing lighters, as above described, it may be combined with the lighter as a self-contained unit. Thus, the thermostats would be located in a recess in the back of the base plate of the lighter, the main thermostat being connected to a bridge or plate carrying one contact of the main controlling switch of the lighter, and the

contact point on the compensating thermostat being connected through the bow spring to one of the terminals on the base plate.

It is within the scope of the invention to dispense with the compensating thermostat, if desired, and to employ a single thermostat controlling the make-and-break contacts, said thermostat being influenced by the heating effect of the current passing through it, or by radiation from the resistance filament, or by both the current and the radiated heat.

Dated this 30th day of May, 1927.

H. N. & W. S. SKERRETT,
24, Temple Row, Birmingham,
Agents for Applicants.

COMPLETE SPECIFICATION.

Improvements relating to Electric Cigar, Cigarette and like Lighters.

We, S. SMITH AND SONS (MOTOR ACCESSORIES) LIMITED, a company registered under the laws of Great Britain, of Central Works, Edgware Road, Cricklewood, London, N.W. 2, FREDERICK WILLIAM MILLER, British subject, and FREDERICK MILLER, British subject, both of 68, Nansen Road, Sparkhill, Birmingham, and also both of "Hazeldell", Aylesbury Road, Hockley Heath, Warwickshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to electric cigar, cigarette, pipe and like lighters of the resistance type, such as are used in motor-cars and other vehicles or in other places for the convenience of smokers.

With lighters of the above type, if the switch is held closed for too long, the high resistance wire or filament becomes unduly heated and fuses, thus putting the lighter out of action.

The object of the present invention is to obviate this disadvantage appertaining to resistance lighters, and to provide, in conjunction with the lighter, an automatic cut-out or protective device which will prevent the fusing of the resistance wire and which may be arranged to maintain the lighter at a substantially uniform glowing temperature no matter how long the switch may remain closed.

According to the invention, a thermostatically-controlled switch or make-and-break device is included in the lighter circuit, the controlling thermostat being

arranged to be influenced by the heating effect of the current flowing or by the temperature of the heater so as to break the circuit before the fusing temperature of the resistance wire is reached. Conveniently the current flows through the thermostat, which carries or operates a switch contact in the circuit, so that it is heated by the current and breaks the circuit. As the thermostat cools it again closes the circuit and so long as the lighter switch remains closed, the thermostat repeatedly opens and closes the circuit, thereby avoiding overheating of the resistance wire, which, in this manner, may be arranged to be maintained at a substantially uniform, or at a variable, glow, as desired. Preferably, a second thermostat element is employed to compensate for the effect of variations in the temperature of the atmosphere in which the main or controlling thermostat is situated due to external influences, such as the heat of the engine or climatic conditions. Without this compensating thermostat variations in the temperature of the surrounding atmosphere, due to causes other than the temperature of the heater, would possibly influence the main thermostat element and cause the circuit to be opened when the lighter was not in use, or cause the contact to be opened too far when the current flowed through the said element. The said compensating thermostat is arranged to carry the contact with which the contact controlled by the main thermostat co-operates, and is influenced by external temperature conditions to the same extent as the main

thermostat, so that any variation in such temperature conditions will affect both contacts equally.

Figure 1 of the accompanying drawings is an elevation of a cut-out device according to the present invention, the casing or cover being shown in section.

Figure 2 is a vertical section through the cut-out on line 2-2, Figure 1.

Figure 3 is a horizontal section on line 3-3, Figure 1.

Figure 4 is a vertical section, partly in elevation, showing the cut-out combined with an electric lighter as a self-contained unit.

Figure 5 is a rear elevation of the said lighter showing the cut-out fitted thereto.

Figure 6 is a horizontal section through the base of the lighter.

Referring to Figures 1 to 3 of the drawings, showing the invention in a form suitable for use with an existing lighter, the cut-out device comprises two parallel bi-metallic thermostatic strips 1, 2, preferably composed of nickel and brass, the strip 1 constituting a main controlling thermostat and the other 2 functioning as a compensating thermostat, as hereinafter described. These strips 1, 2, are fixed at one end to suitable metallic studs or posts 3, 4, secured upon a base plate 5 of insulating material and the stud or post 3 carrying the main thermostatic strip 1 is connected by a suitable conductor 6 to a terminal 7 on the said base plate said terminal being adapted to be connected in the electric circuit of the lighter. The said strip 1 carries at its free end a contact point 8 of any suitable material, such as nickel, and this contact point normally engages a similar contact point 9 carried upon the free end of the other or compensating strip 2. The said free end of this latter strip is riveted or otherwise directly connected to one end of a light flexible bow spring 10, the other end of which is fixed to a conducting strip or bar 11 connected to a second terminal 12 on the base plate, the said terminal 12 being connected in the lighter circuit. The bow spring 10 acts as a flexible conductor for the current and also assists normally to maintain the contact points 8, 9, together.

When the lighter switch is closed the current flows from the terminal 7 through the main thermostatic strip 1, traverses the closed contact points 8, 9, and passes through the bow spring 10 and conducting bar 11 to the other terminal 12. The said main thermostatic strip 1 is made of such a resistance that when the resistance filament of the lighter attains a bright red glow, and before the fusing point of the

said filament is reached, the heating effect of the current passing through the strip causes the latter to deflect away from the compensating strip 2 and the contact points 8, 9, to separate, thus breaking the circuit. The main strip 1 thus commences to cool and returns to its former position, the contact points coming together and (if the main lighter switch remains closed) again completing the circuit, the operation being repeated so long as the said main lighter switch remains closed. It can be arranged for the interval between the breaking and re-closing of the circuit to be very short so that the lighter will be maintained at a substantially uniform glow, or the interval can be longer so that the lighter will alternately glow and cool.

The cut-out may be enclosed by a detachable cover 13 suitably secured to the base plate.

The compensating thermostatic strip 2 has a similar deflection characteristic to the main strip 1, so that if the temperature of the surrounding atmosphere varies, due to the heat of the engine or by reason of climatic conditions, both the said compensating strip 2 and the main thermostatic strip 1, will move together and to the same extent, so that the contact points 8, 9, will remain closed until a current passes through the main strip. Thus the opening of the circuit is dependent solely upon the heating effect of the current. In a modification, however, it may be arranged for the circuit-controlling thermostatic element to be placed close to the resistance filament so as to be influenced by the heat radiated therefrom in order to open the circuit before the fusing point of the filament is reached. In this case, however, the compensating thermostat, while moving in the same direction, would have a different deflection characteristic from the main thermostat, so that the contacts would remain together during small variations in temperature due to engine heat or atmospheric conditions, but would separate under the influence of the greater increase of temperature due to radiation from the lighter.

Instead of the cut-out being in the form of a separate fitting for use with existing lighters, as above described, it may as shown in Figures 4 to 6, be combined with the lighter as a self-contained unit. In this arrangement thermostats 1, 2, are located in a recess 14 in the back of the base plate 15 of the lighter, the main thermostat 1 carrying the contact 8 being connected by a bar 16 to a bridge or plate 17 carrying one contact 18 of the main controlling switch 19 of the lighter, and

the contact point 9 on the compensating thermostat 2 being connected through the low spring 10 and bar 20 to a terminal 21 on the base plate. In the construction of the lighter shown in the drawings, but which, apart from the cut-out, forms no part of the present invention, the other terminal 22 (Figure 5) for connecting to the battery is in electrical connection with a metal rim or flange 23 engaging a metal ring 24 on a detachable front portion 25 carrying the resistance filament 26 which is connected to a stud 27 engaging a contact 28 on the spring switch arm 19, which carries a contact 29 adapted, when the arm is pressed rearwards, to engage the contact stud 18 on the bridge 17, so completing the circuit.

It is within the scope of the invention to dispense with the compensating thermostat, if desired, and to employ a single thermostat controlling the make-and-break contacts, said thermostat being influenced by the heating effect of the current passing through it, or by radiation from the resistance filament, or by both the current and the radiator heat.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A cut-out device for use in connection with an electric cigar, cigarette or like lighter comprising a thermostatically-controlled switch or make-and-break device adapted to be included in the lighter circuit.

2. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in Claim 1, wherein the controlling thermostat is adapted to be traversed by the electric current flowing through the resistance of the lighter, so as to be influenced by the heating effect of the said current.

3. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in Claim 1 or 2, wherein the controlling thermostat is adapted to be influenced by the heat from the resistance of the lighter.

4. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in any one of the preceding claims, wherein the controlling thermostat

comprises a bi-metallic strip fixed at one end and carrying or operating a switch contact in the lighter circuit, substantially as described.

5. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in any one of the preceding claims, having in combination with a main controlling thermostat arranged to break the circuit, a compensating thermostat element carrying the contact with which the contact controlled by the main thermostat co-operates and adapted, under the influence of variations in the temperature of the atmosphere due to external conditions, to move its said contact in the same direction as the contact controlled by the main thermostat moves, substantially as and for the purposes herein described.

6. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in Claim 5, wherein the compensating thermostat element consists of a bi-metallic strip fixed at one end and arranged substantially parallel to a bi-metallic strip constituting the main controlling thermostat, the two strips carrying co-operating contacts at their free ends, substantially as described.

7. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in Claim 6 or 7, wherein the contact on the compensating thermostat is connected in the circuit of the lighter through the medium of a flexible spring conductor attached to the said thermostat, substantially as described.

8. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in any one of the preceding claims, and mounted upon the base of the lighter itself so as to form a self-contained unit, substantially as described.

9. A cut-out device for use with an electric cigar, cigarette or like lighter, substantially as herein described and set forth in Figures 1 to 3 of the drawings.

10. A cut-out device combined with an electric cigar, cigarette or like lighter, substantially as herein described and set forth in Figures 4 to 6 of the drawings.

Dated this 1st day of June, 1927.

H. N. & W. S. SKERRETT,

24, Temple Row, Birmingham,
Agents for the Applicants.

NOT OF JAIL

No 17

Know all Men by these Presents, That
 as Trustee and Mortgagee of Central Stamping Company

ERNEST J. LAUDRY,

City Detroit of Wayne in the County of Wayne
 and State of Michigan, part y of the first part, for and in consideration of the sum of One and no 100 ~~and other valuable consideration~~ Dollars, lawful money of the United States, to him paid by S. J. JESSOP

part y of the second part, the receipt whereof is hereby acknowledged, ha his bargained and sold, and by these presents do his grant and convey, unto the said part y of the second part, his executors, administrators or assigns, all the following goods and chattels, to wit: All of the assets of the said Central Stamping Company, including all machinery, furniture, equipment and all material of every description including office furniture and equipment and all accounts receivable and any other assets of any description

which said above described goods and chattels belong to Ernest J. Laundry, as Trustee and Mortgagee of said Central Stamping Company
his 2182 East Tarned Street,
 City of Detroit, Michigan

To Have and to Hold the same unto the said part y of the second part, his executors, administrators and assigns, Forever. And the said part y of the first part, for his heirs, executors and administrators, do his covenant and agree to and with the said part y of the second part, his executors, administrators and assigns, to Warrant and Defend the said hereby made and said property, goods and chattels, unto the said part y of the second part his executors, administrators and assigns, against all and every person or persons whatsoever.

In Witness Whereof, the said part y of the first part, his hereunto set his hand and seal this 27th day of December A. D. 19 20

Signed, Sealed and Delivered in Presence of

Thelma Sweeney [L. S.]
Gail A. Atkins [L. S.]
Central Stamping Co. [L. S.]
Ernest J. Laundry [L. S.]
Trustee & Mortgagee [L. S.]
4 mich corp.

STATE OF MICHIGAN,
County of Wayne ss.

Ernest Landry
being duly sworn, deposes and says that he
the vendor, named in the within bill of sale, that he has knowledge of the facts, and that the con-
sideration of said instrument was actual and adequate, and that the same was given in good faith
for the purposes therein set forth.

Subscribed and sworn to before me this

27th day of
December 1926

Gail A. Atkins
Notary Public, Wayne County, Michigan.

My commission expires January 14 1927

"Insert 'is' or 'is one of' or 'he makes this affidavit for.'"

27
BILL OF SALE

ERNEST L. LANDRY, as
Trustee and Mortgagee of
CENTRAL STAMPING COMPANY

TO

S. JESSOP

Filed this

day of

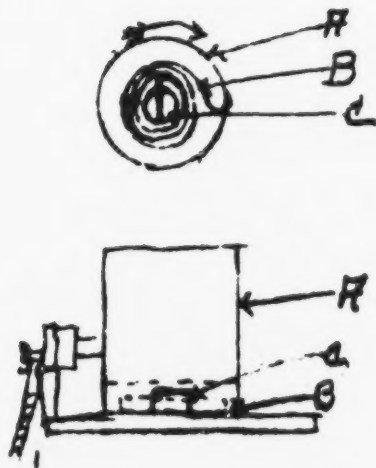
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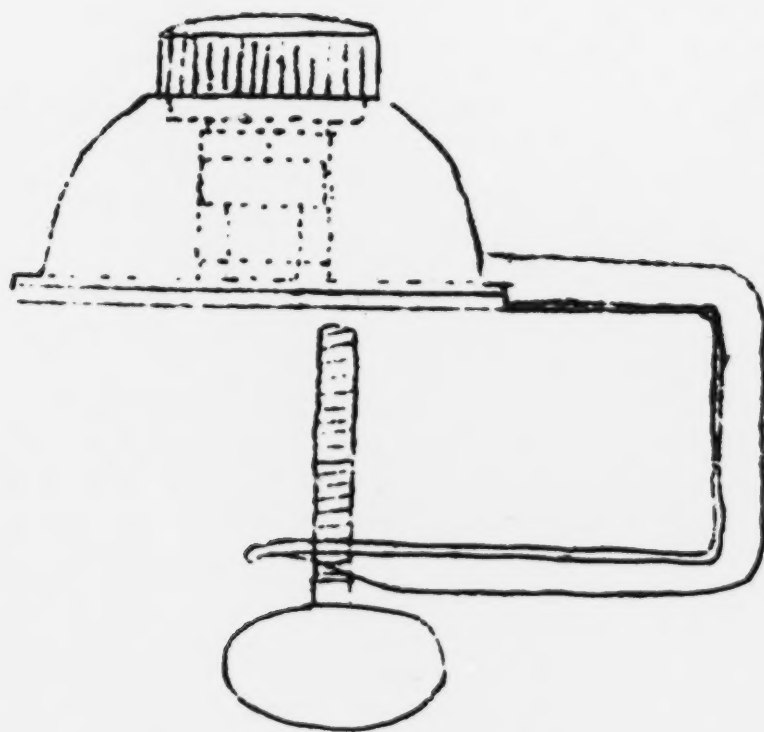
PLAINTIFF'S EXHIBIT No. 32



As the socket "H" is turned to right, the thermo spring "B" is drawn tightly around stationary work head "C" and locked by catch. When the spring "B" starts to expand the tension becomes greater until it builds up enough power to pull the socket off catch.

Would rather not use phosphor
 bronze compensator spring, but
 if it is necessary it will act
 about the same as the spring
 on a spher. It will expand
 inside the thermostatic
 spring, and thereby keep
 a constant tension on the
 thermostatic metal. This metal
 does not seem to have the
 life that phosphor bronze
 has, and also has a tendency
 to stretch. Ask the patent
 attorney if this part can not
 be covered temporarily
 until the exact design, and
 gauge of metal is decided
 upon

O. L. L.



*Full size sketch of complete
lighting*

391

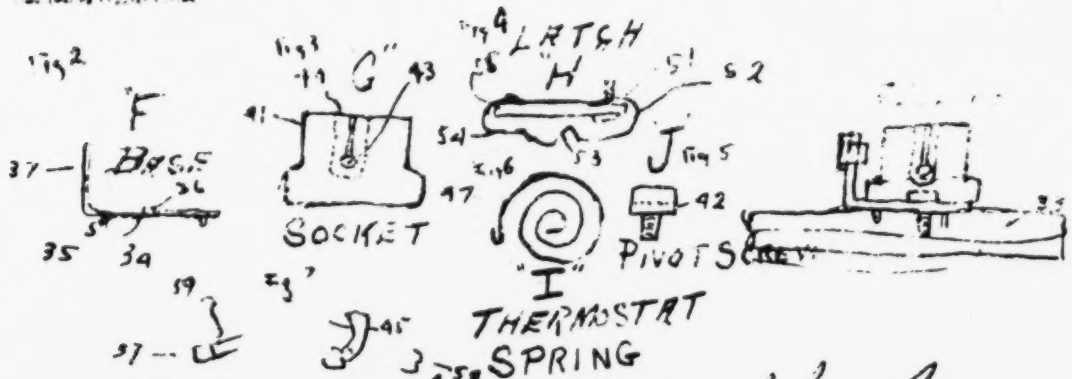


RED CAP PRODUCTS

THE CENTRAL STAMPING CO.

2152 LARNED STREET EAST
DETROIT, MICHIGANTELEPHONE
DETROIT 1-1000

1. Red Cap Products
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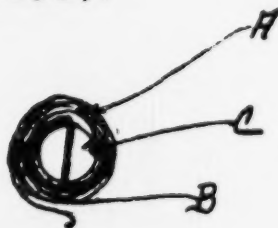


Mechanical features of socket & release const:
 "F" Stamped & formed of brass. One leg formed up
 to fit in slot in base of socket "G" to act as stop. Two
 legs formed down to anchor Base "F" to fiber base.
 One hole punched in center for Pivot screw "J".
 One section of side formed up for retaining
 latch "H".
 "G" Socket: Closed at bottom with hole punched in
 center for Pivot screw "J". Open at top. Clearance
 opening punched on one side for latch pin "E". Slot
 on opposite side to fit formed portion of shell "B".
 Bulged at bottom to permit Thermostatic Spring "I"
 OVER

S. T. LESSOP CO., INC.

Received Aug 11, 1927

We are attaching hereto sketch of
 thermostatic coil spring ^{which will ~~maintain~~ ^{method of}}
 effecting release. The catch is constructed
 of thermostatic metal to act as an added
 safety measure should the ~~coil~~ ^{constant} action
 of coil not be sufficient to release, before
 heating element in plug would burn out.
 Coil thermostatic spring is fastened in bottom
 of socket directly under heating element on
 plug the action being governed by amount of
 heat passing thru coil.



- "A" - Coil spring of thermostatic metal
 "B" - Inner coil spring of Foepf Bronze metal
 to maintain constant outward tension on
 thermostatic spring "A".
 "C" - Pivot screw in nut with slotted head.

to operate.

"H" Latch or Ketch. ^{os p 207} ~~os p 207~~ Bronze formed and riveted to piece of fiber.

"I" Thermostatic Spring. Coiled of thermostatic metal.

"J" Pivot Screw. Special screw with slotted head to permit anchoring end of thermostatic spring "I".

Assembly.

Latch "H" screwed to upright part of Base "F" and insulated; Pivot screw "J" passed thru socket "G" and Base "F" and fiber base and screwed into metal clamp. Thermostatic spring "I" fastened in place one end in slotted Pivot screw "J" and other end to socket "G". This completes assembly except attaching outer cover.

These sketches and instructions are very simple, but they may be of use to your patent attorney in drawing his claims.

H. B. H.



16
21
AUG 6 '27

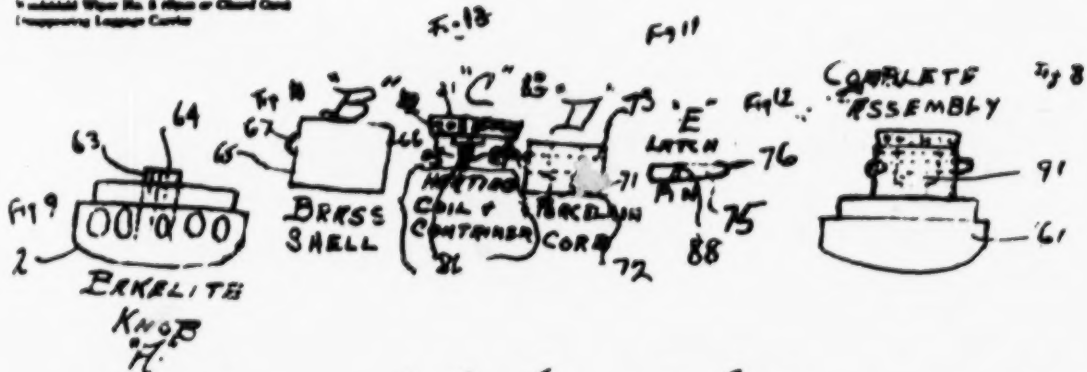
RED CAP PRODUCTS

Valve Cover (Standard)
Crank Case Oiler (Standard)
Bore Sifter (Ford and Chevrolet)
Timing Pist Sifter (Ford)
Spark and Timing Sifter (Ford)
Woodruff Wiper No. 1 of 2 in. O.D.
Woodruff Wiper No. 2 of 2 in. O.D.
Woodruff Wiper No. 3 of 2 in. O.D.
Timing Pist Sifter (Ford)

THE CENTRAL STAMPING CO.

512 LARNED STREET EAST
DETROIT, MICHIGAN

TELEPHONE
BROADWOOD 333



Mechanical features of lighter construction:
H-Bracket foot with $\frac{1}{4}$ sq. x $\frac{1}{2}$ long brass pin molded in center. Brass pin drilled & tapped thru center.
B-Stamped Diagon Brass shell, pin at top and closed on bottom with $\frac{1}{4}$ sq. hole punched in bottom to fit over square pin in part R. Clearance hole punched in one side for pin E and embossed on opposite side $\frac{1}{16}$ to act as driver.

C-Heating Coil Container: Stamped & formed brass, perforated on side with 3 slots for inserting end of coil thru for ground connection. Clearance hole in bottom for 3-56 screw. Nut being screwed up on 3-56 screw against bottom of C making uplocable.
OVER unit.

D. Porcelain Core: Made of porcelain to fit inside of shell B with $\frac{1}{4}$ " square hole in bottom to fit over square pin in Bakelite knob H. Round hole approx $\frac{1}{8}$ " dia at right angle to square hole, for latch pin E.

E. Latch Pin: Brass pin approx $\frac{1}{8}$ " dia x $\frac{3}{4}$ " long tapered and rounded at one end and tapered then center 3-56 for positive connection on crib assembly.

Insert porcelain core D in Brass shell B. Set $\frac{1}{4}$ " square brass pin in Bakelite knob. Screw in place with 4-36. Border head screw thru hole in center of porcelain core into square brass pin. Insert Brass latch pin E in hole in side of porcelain core with tapered end out. Screw unit C into place by 3-56 screw into 3-56 tapered hole in latch pin E. The Brass shell B should be $\frac{1}{4}$ " longer than porcelain core D so that the tapered outer wall on heating unit C will wedge tightly on inside of shell B when screwed down in place. This makes a simple, cheap, construction, and very fast replaceable. This is important, especially in the case of heating unit C as they burn out in time, and are sold at .50 each.

PLAINTIFF'S EXHIBIT No. 34

THE CENTRAL STAMPING CO.

(INCORPORATED)

2132 LARNED STREET EAST

DETROIT, MICHIGAN August 6th, 1926

SOLD TO S.T. Jessop Co. Inc.,
Chicago, Ill.

No. 6068-A
N^o 78388

YOUR ORDER NO.

TERMS Reg.

VIA

Special Dies, Tools and Fixtures for Two-in-One Button:		
1 Spinning Tool for Shells	\$35.00	40 00
1 Horn Die for handle hole in shell	25.00	45 00
1 Blanking Die for switch handle	30.00	30 00
1 Blanking Die for Fibre Bases	125.00	150 00
1 " " " Insulators	50.00	10 00
2 Gang Forming Tools & Holder for Nuts	20.00	35 00
1 Gang Cut-off Tool Holder	12.00	18 00
1 Milling Fixture for milling slot in nuts	8.00	10 00
1 Straight Shank Drill Holder for 35/64" Drill	16.00	25 00
2 " " Drills, high speed, 35/64"	2.00	2 00
1 3/8" High Speed convex Milling Cutter	10.00	15 00
1 Special High Speed cutter for making Form. Tools	12.00	18 00
6 5/8" - 16 Special taps	18.00	22 00
6 5/8" - 18 special taps	18.00	22 00
2 Dies for Forming Rivets	24.00	35 00
		617.00

THE CENTRAL STAMPING CO.

(INCORPORATED)

2132 LARNED STREET EAST

DETROIT, MICHIGAN August 6th, 1926

SOLD TO S.T. Jessop Co. Inc.,
Chicago, Ill.

No. 6088-A Cont'd
N^o 8228

YOUR ORDER NO.

TERMS

VIA

Page two

1-Rivet Forming Die for contact Assembly	25.00	18.00
1-Wire Stripping machine complete with 1/4 H.P. Motor	10.00	35.00
3-Pairs Assembling Pliers	5.00	3.00
1-Final Assembly Bench Fixture	45.00	20.00
	78.00	
	153.00	

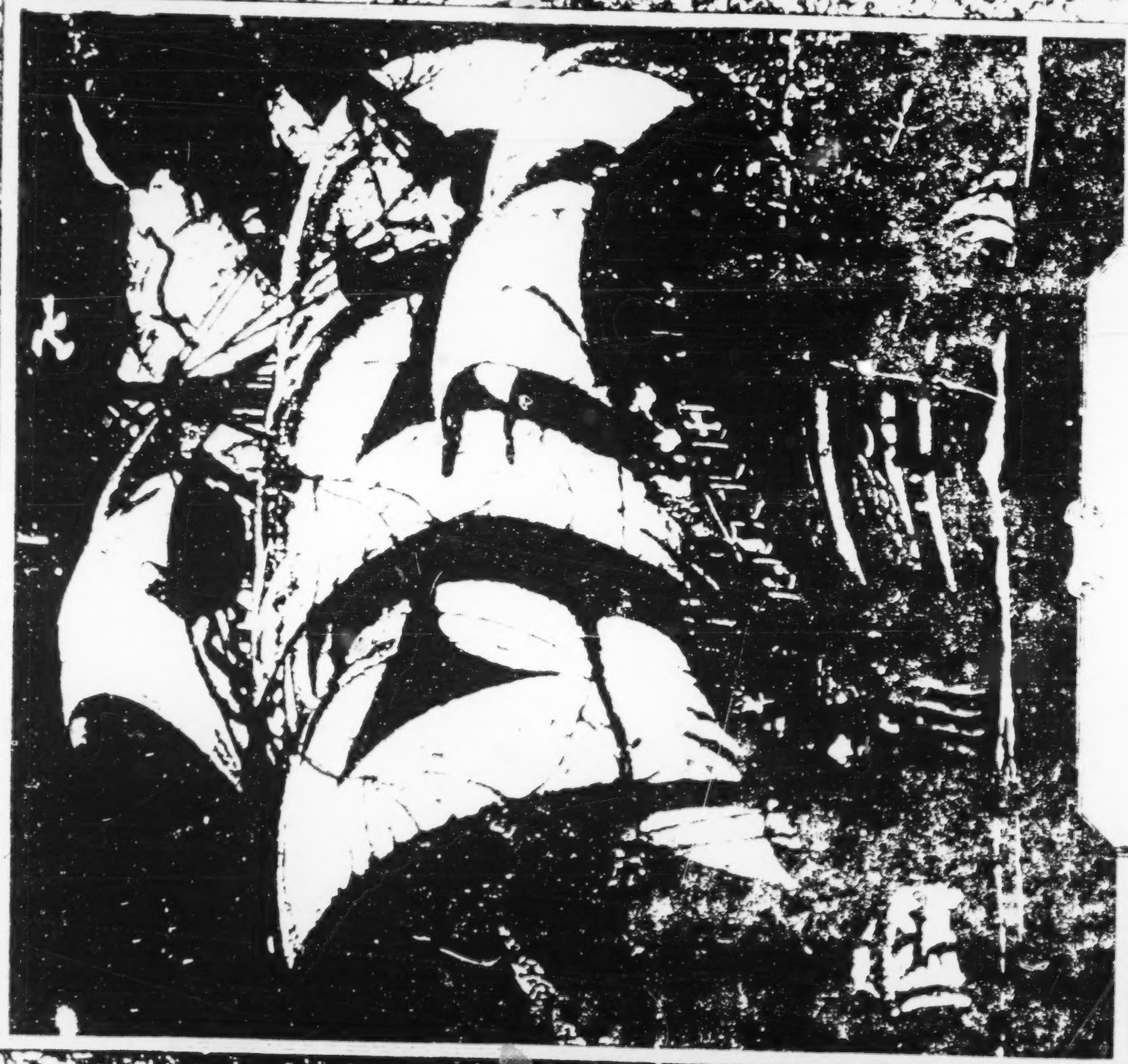
\$496.00

24.75

\$520.75

1-Blanking Die for Contact Points

PAID
Aug - 15 1926
S.T. Jessop Co. Inc.

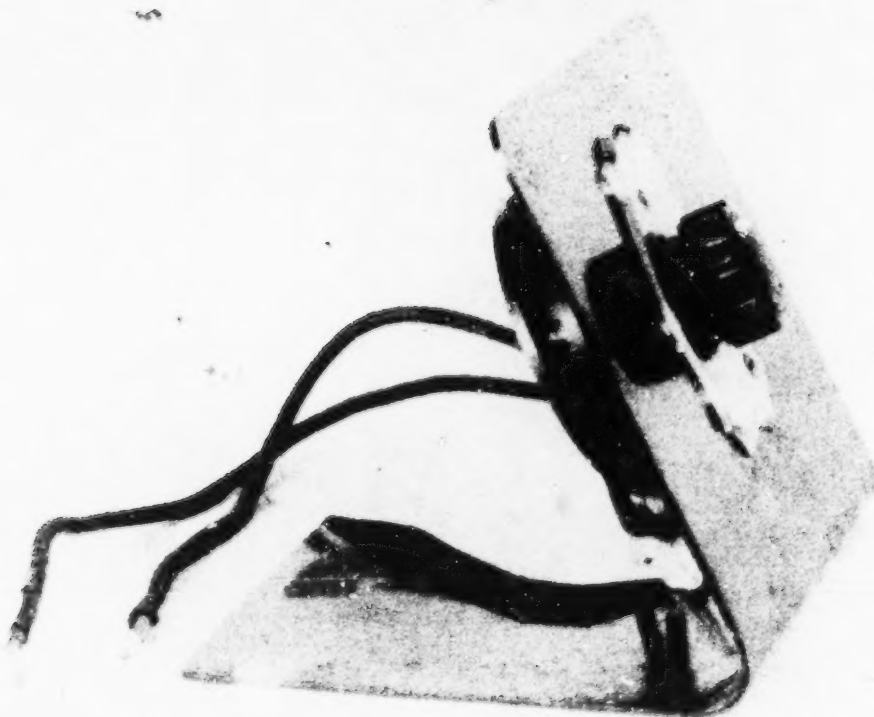
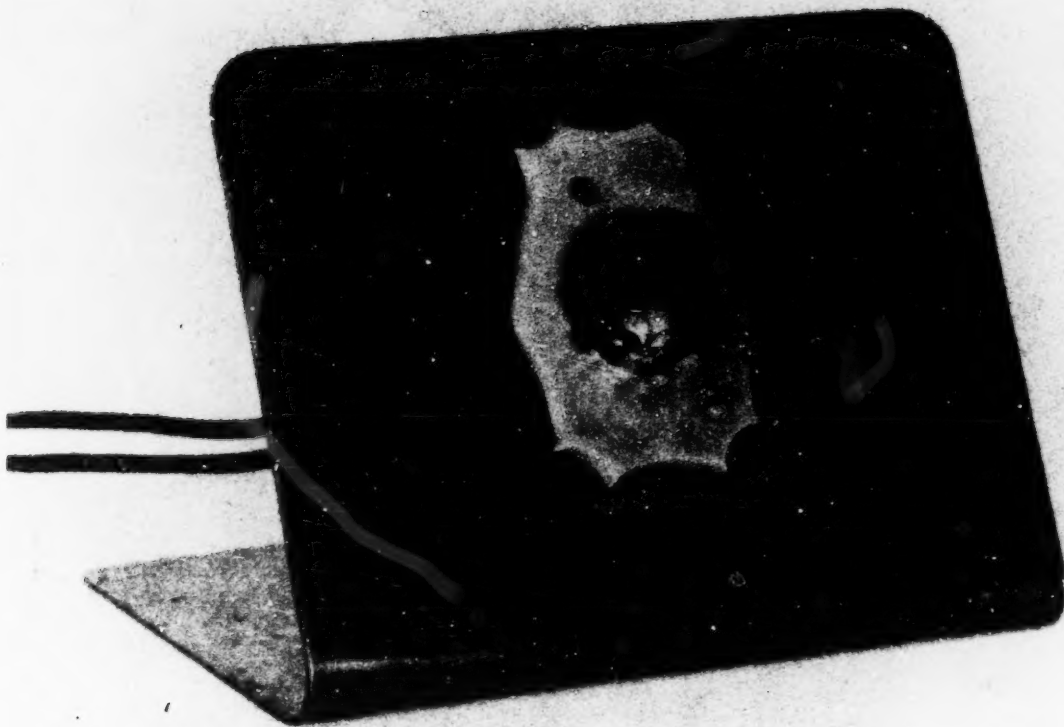


MONTGOMERY WARD & CO.

CHICAGO

Catalogue Number 109

Fall and Winter 1928-29



[fol. 401]

PLAINTIFF'S EXHIBIT No. 39

Shipments of Jesco Automatch—As Indicated by Invoices
of S. T. Jessop Company, Inc.

Invoice Number	Date	Customer	Number	Amount
2579	Jan. 19, 1928	L. F. Pierson.....	1	\$1.60
2618	Feb. 6, 1928	Fall River Auto Supply Co.....	6	9.60
2619	Feb. 6, 1928	Dave's Auto Accessory.....	12	21.00
2620	Feb. 6, 1928	The Rubber Store.....	12	19.20
2622	Feb. 6, 1928	Milburn & Kreft.....	1	1.66
2635	Feb. 6, 1928	Auto & Aero Supply Co.....	2	3.50
2636	Feb. 6, 1928	Norman Baughman Co.....	1	1.60
2637	Feb. 6, 1928	General Motors Supply Co.....	1	1.60
2638	Feb. 6, 1928	W. C. Landon & Co., Inc.....	1	1.60
2647	Feb. 10, 1928	Ritter's.....	4	7.00
2649	Feb. 9, 1928	W. Fred Pierson.....	1	1.60
2650	Feb. 9, 1928	Guarantee Tire & Rubber Co.....	12	21.00
2652	Feb. 10, 1928	Western Auto Supply Co.....	1	1.75
2653	Feb. 10, 1928	Gamble Stores, Inc.....	1	1.75
2654	Feb. 10, 1928	Western Auto Supply Co.....	1	1.75
2655	Feb. 10, 1928	Hanson Duluth Co.....	1	1.60
2656	Feb. 11, 1928	Retail Chain Stores Corp.....	12	21.00
2658	Feb. 15, 1928	A. W. Kaufman.....	1	1.50
2659	Feb. 13, 1928	C. P. Myers.....	3	4.50
2660	Feb. 13, 1928	Henry's Auto Access.....	12	21.00
2676	Feb. 16, 1928	Van's Auto Specialty Co.....	6	9.60
2697	Feb. 23, 1928	Milburn & Kreft.....	6	9.60
2714	Feb. 29, 1928	(Cash Sale).....	4	6.40
2768	Mar. 13, 1928	Fournier Mfg. Co.....	4	7.00
2794	Mar. 19, 1928	E. A. Bowman, Inc.....	12	19.20
2795	Mar. 17, 1928	The T. Eaton Co.....	6	10.50
2796	Mar. 17, 1928	C. P. Myers.....	1	1.50
2805	Mar. 20, 1928	Korte Bros.....	12	19.20
2809	Mar. 22, 1928	The T. Eaton Co.....	12	21.00
2819	Mar. 24, 1928	Gillespie Auto Supply Co.....	1	1.75
2820	Mar. 24, 1928	C. P. Myers.....	2	3.00
2825	Mar. 26, 1928	Montgomery Ward & Co., Baltimore.....	1	1.58
2828	Mar. 26, 1928	Montgomery Ward & Co., Kansas City.....	1	1.58
2830	Mar. 26, 1928	Montgomery Ward & Co., St. Paul.....	1	1.58
2834	Mar. 26, 1928	Montgomery Ward & Co., Chicago.....	2	3.15
2864	Apr. 4, 1928	Sweeney Supply Stores.....	1	1.75
2881	Apr. 9, 1928	San Pedro Auto Supply Co.....	10	16.00
2884	Apr. 10, 1928	F. J. Keller Co.....	3	4.80
2885	Apr. 10, 1928	Kaplan Bros.....	12	19.20
2886	Apr. 10, 1928	Leo's Auto Access.....	3	5.25
2893	Apr. 12, 1928	The Foster Auto Supply Co.....	1	2.00
2894	Apr. 12, 1928	The Van Voorhies-Phinney Co.....	1	2.00
2895	Apr. 12, 1928	Elkhart Motor Supply Co.....	12	21.00
2925	Apr. 17, 1928	Pekin Leather Products Co.....	2	3.60
2974	May 1, 1928	Auto Accessory Spec. Co.....	12	18.90
2975	May 1, 1928	Salzedo Garage.....	1	2.10
2980	May 3, 1928	Western Auto Supply Co.....	3	4.73
2992	May 8, 1928	W. Fred Pierson.....	2	3.20

[fol. 402]

Invoice Number	Date	Customer	Number	Amount
3044	May 21, 1928	Lloyd Wynne.....	1	1.50
3062	May 28, 1928	B. Lee.....	2	3.50
3079	June 1, 1928	Fournier Mfg. Co.....	6	10.50
3085	June 8, 1928	B. R. Tolmas.....	2	3.50
3087	June 3, 1928	Lloyd Wynne.....	(2)	4.00
			(2)	4.00
3090	June 5, 1928	O'Toole & Gibbons.....	2	3.50
3092	June 6, 1928	E. M. Salzburg.....	2	3.20
3093	June 6, 1928	O. L. Erwin.....	2	3.50
3097	June 3, 1928	National Motor Products Co.....	24	37.80
3098	June 3, 1928	A. E. Steppler.....	2	3.20
3163	June 30, 1928	Montgomery Ward & Co., Portland, Ore....	50	78.75
3171	June 30, 1928	Willey Garman Co.....	6	12.12
3174	June 30, 1928	Montgomery Ward & Co., Kansas City....	25	39.38
3179	July 3, 1928	Montgomery Ward & Co., Chicago.....	50	78.75
3187	July 5, 1928	E. L. Jones.....	2	3.50
3191	July 5, 1928	Montgomery Ward & Co., Oakland.....	150	236.25
3199	July 7, 1928	National Motor Products.....	12	24.30
3206	July 9, 1928	F. H. Lichtenwalter & Co.....	(2)	4.05
			(2)	3.15
3207	July 11, 1928	W. Jones.....	2	3.50
3228	June 30, 1928	Montgomery Ward & Co., St. Paul.....	10	15.75
3229	July 18, 1928	Montgomery Ward & Co., Baltimore.....	100	157.50
3250	July 25, 1928	Montgomery Ward & Co., Baltimore.....	100	157.50
3282	Aug. 3, 1928	Adam Kaufman.....	(2)	3.00
			(2)	3.00
3299	Aug. 7, 1928	Montgomery Ward & Co., St. Paul.....	30	47.25
3301	Aug. 7, 1928	Fournier Mfg. Co.....	6	10.50
3314	Aug. 11, 1928	Montgomery Ward & Co., St. Paul.....	6	9.45
3315	Aug. 11, 1928	Montgomery Ward & Co., Kansas City....	12	18.90
3346	Aug. 17, 1928	Trico Products Corp.....	(1)	2.02
			(1)	1.58
3356	Aug. 21, 1928	Montgomery Ward & Co., Kansas City....	12	18.90
3393	Aug. 31, 1928	Montgomery Ward & Co., Chicago.....	50	78.75
3407	Sep. 1, 1928	W. Fred Pierson.....	(1)	1.38
			(1)	1.75
			(1)	1.75
3421	Sep. 6, 1928	Mr. Woods (Canadian Lakes Fishing).....	1	1.38
3428	Sep. 7, 1928	Chicago Auto Supply House.....	12	16.56
3429	Sep. 8, 1928	E. W. Aufderheide.....	1	1.38
3438	Sep. 10, 1928	C. B. Marlatt.....	2	3.50
3449	Sep. 10, 1928	C. A. Pearson.....	2	2.75
3493	Sep. 12, 1928	Montgomery Ward & Co., Portland, Ore....	50	78.75
[fol. 403]				
3495	Sep. 19, 1928	Montgomery Ward & Co., Portland.....	50	78.75
3545	Sep. 22, 1928	National Gauge & Equipt. Co.....	2	3.00
3558	Sep. 28, 1928	Montgomery Ward & Co., St. Paul.....	30	47.25
3578	Oct. 1, 1928	Montgomery Ward & Co., Kansas City....	20	31.50
3609	Oct. 8, 1928	Montgomery Ward & Co., Chicago.....	25	39.38
3637	Oct. 13, 1928	Montgomery Ward & Co., Oakland.....	(25)	39.38
			(25)	39.38
3654	Oct. 17, 1928	Montgomery Ward & Co., Portland.....	150	236.25
3674	Oct. 15, 1928	Montgomery Ward & Co., Chicago.....	25	39.38
3734	Oct. 31, 1928	(Cash Sale) M. S. Jordan.....	1	2.75
3749	Nov. 1, 1928	Montgomery Ward & Co., Kansas City....	20	25.00

Invoice Number	Date	Customer	Number	Amount
3760	Nov. 1, 1928	Montgomery Ward & Co., Chicago.....	50	62.50
3768	Nov. 8, 1928	Mr. Hamilton (Cash Sale).....	1	1.50
3769	Nov. 3, 1928	Montgomery Ward & Co., St. Paul.....	(2	3.16
			(1	1.56
3779	Nov. 10, 1928	Montgomery Ward & Co., Oakland.....	300	375.00
3825	Nov. 17, 1928	C. P. Myers.....	1	1.50
3834	Nov. 23, 1928	Montgomery Ward & Co., Chicago.....	100	125.00
3843	Nov. 24, 1928	Montgomery Ward & Co., Kansas City....	20	25.00
3852	Nov. 30, 1928	Montgomery Ward & Co., Baltimore.....	50	62.50
3856	Nov. 30, 1928	Montgomery Ward & Co., St. Paul.....	15	18.75
3879	Dec. 6, 1928	Montgomery Ward & Co., Denver.....	20	25.00
3911	Dec. 15, 1928	Montgomery Ward & Co., Kansas City....	20	25.00
3939	Dec. 31, 1928	Montgomery Ward & Co., St. Paul.....	(1	1.25
			(2 memo.	

404

DEFENDANT'S EXHIBIT B

Automatic Devices Corp.
 Cues Eng Corp.
 Locker #97

CASCO LIGHTER

Fig. 1.

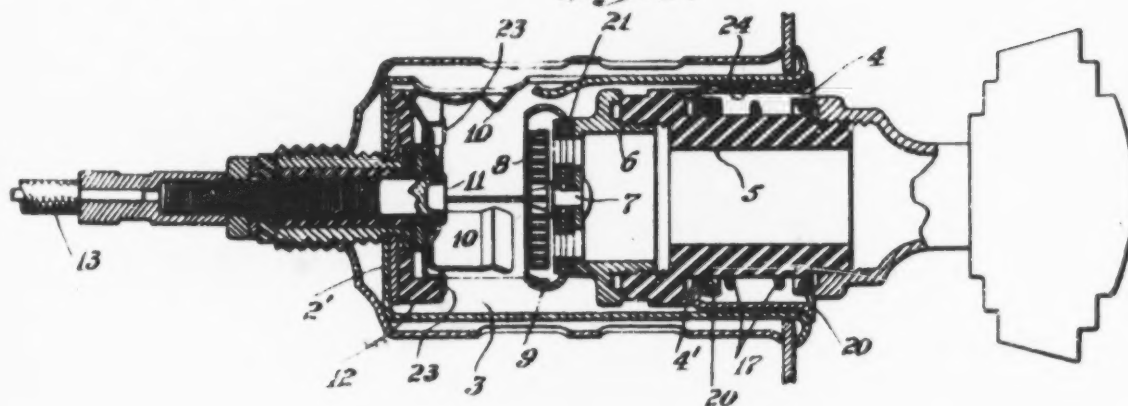
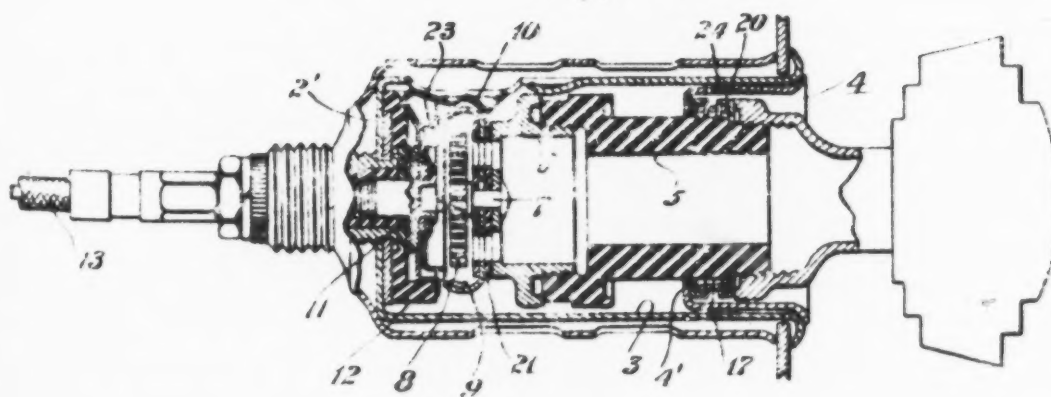


Fig. 2.

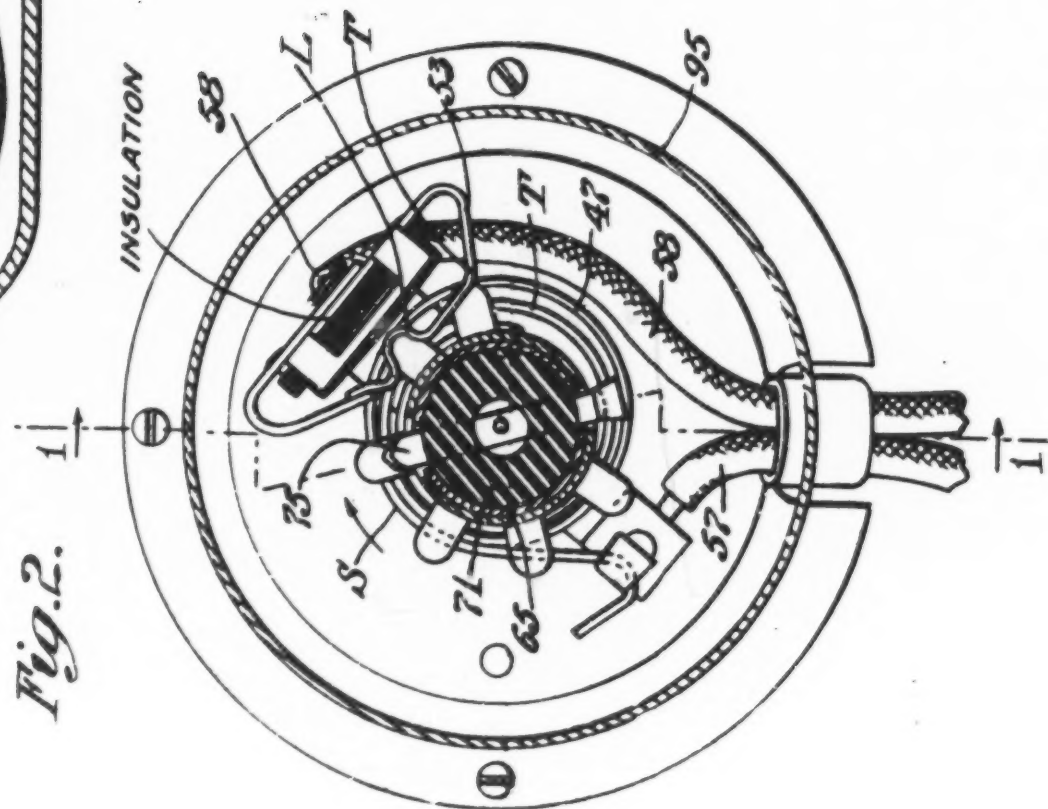
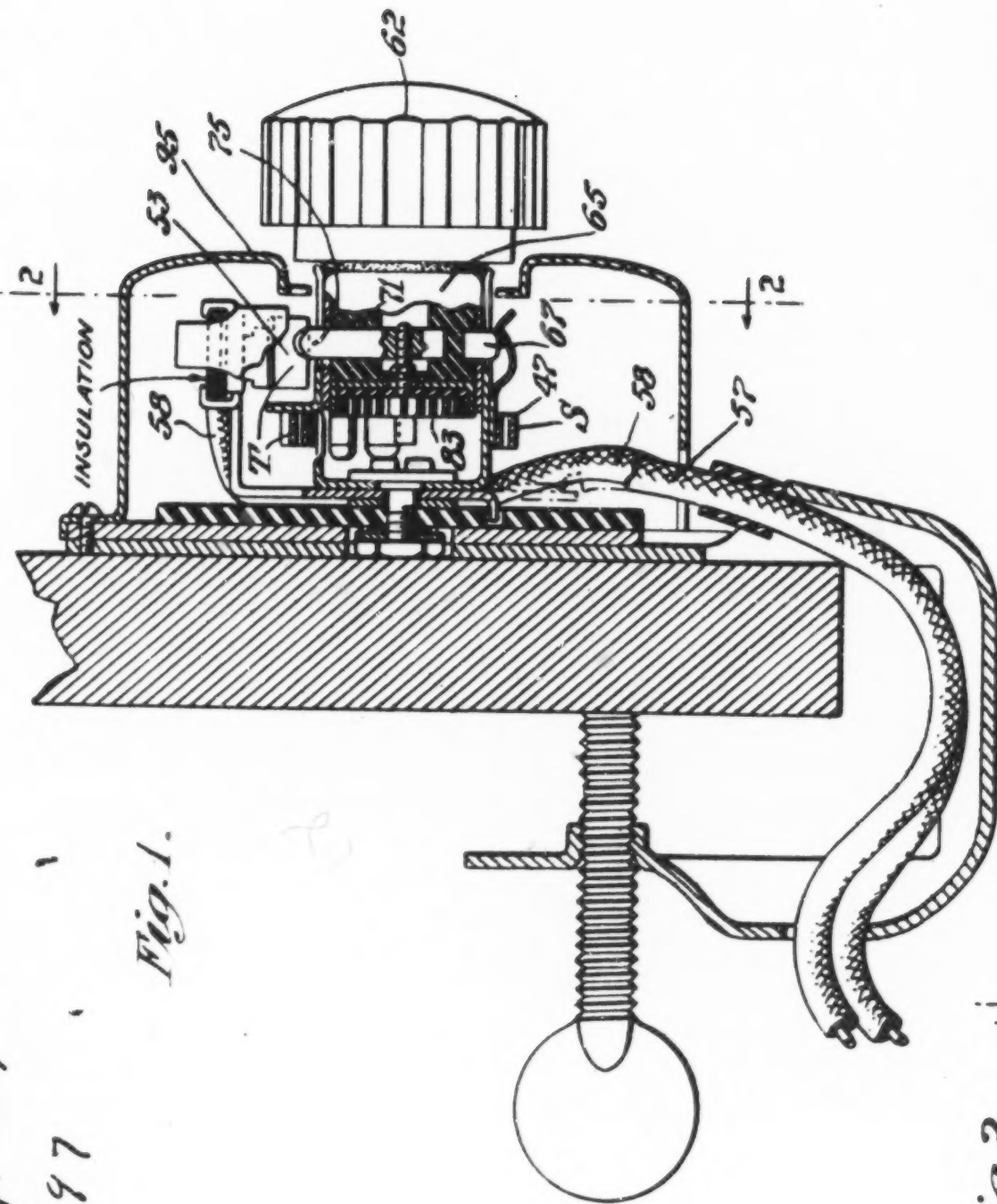


MEAD DEVICE

Automatic Service Corp

20.
Cano Eng. Corp

Locker #97



THE SUNDAY EVENING POST

April 10-1937

in the...
...
... 97

DOES YOUR
CAR LIGHTER
WORK?



ARE YOU ONE
WHO CAN'T BE
BOtherED WITH
A CAR LIGHTER?



HERE'S THE
ANSWER TO A
SMOKER'S PRAYER



A LIGHTER
THAT THINKS
FOR YOU
it's automatic

JUST PRESS
you do not have to hold it in

CLICK
it signals when light is ready



Note the distinctive shape of the Casco Automatic Lighter... it's easier to handle... easier to pass from one person to another... no danger of burning fingers. Color selection: Pearl White, Brown Quartz or Black.

\$2.50

complete... Takes but 5 minutes to install on your car through the ignition panel, or attached with bracket included with lighter.

Here's a lighter that can't fail, a lighter that's never too hot, never too cold... it's thermostatically controlled. Tested for over 20,000 lights. Approved by engineers of leading automobile manufacturers. Guaranteed unconditionally. Ends fumbling... pushing... dangerous, one-hand, blind driving. A safety lighter... you keep your hands on the steering wheel, your eyes on the road and your mind on your driving. Adds to smoking pleasure. Order direct if not available at your garage or auto supply dealer. Send no money. Pay postman on delivery.

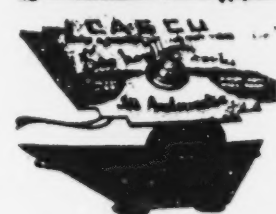
CASCO PRODUCTS CORPORATION - BRIDGEPORT, CONN.
George M. Watson Company, 287 King St., East, Toronto

CASCO
AUTOMATIC
LIGHTER

CASCO ADVERTISING

NATIONAL MAGAZINES AND RADIO

to help you sell the
NEW AUTOMATIC CIGAR LIGHTER



FREE DEMONSTRATOR
FREE with initial order.
Wires to Storage Battery.
Held to show case or counter with suction cups. Attracts customers. Sells Lighters.



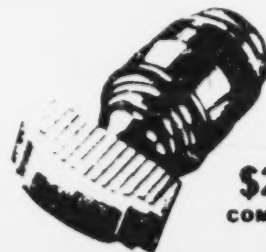
DISPLAY CONTAINER

• The attractive counter display pictured above (size 8 1/2" x 14") holds 10 units. A good silent salesman. Protects against thieving.

• Over 83 million advertisements... full pages in color and dominant copy ... will be carried by the leading National magazines shown in this ad. The schedule starts in April, 1937 and runs consistently through the year. Supporting this campaign, to help you sell, will be spot radio broadcasts over key stations. Every motorist who can read or hear will be influenced by Casco advertising.

CASCO PRODUCTS CORPORATION
Bridgeport, Conn.

• Installed on any car in five minutes... attached with bracket or through instrument panel. All wired ready to hook up. Bracket packaged with every lighter. Pearl Gray, Golden Brown and Ebony color selections.



**\$2.50
COMPLETE**

CASCO

Automatic LIGHTER

Automatic Devices Corp.

Casco Eng. Corp. Route 1 "87 33

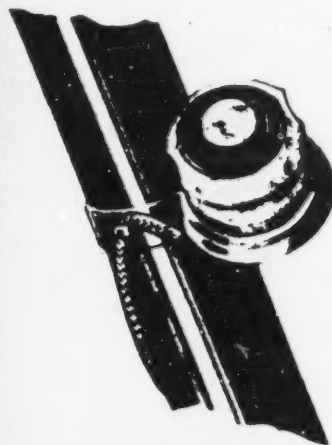
FEBRUARY 1937

CASCO

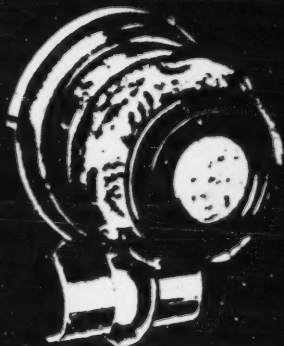
Cigar Lighters

All Lighters available in two types. Plain numbers designate Clamp-on type. Numbers with suffix "C" mount Thru-the-Dash or on Steering Column, with bracket for use.

Illustrations actual size



All C type Lighters are furnished with bracket to fit on steering column. For Thru-the-Dash, also sold bracket, steel, 1/2" hole.



No. 485—ONYXOID VIS-O-LITE. \$1.75

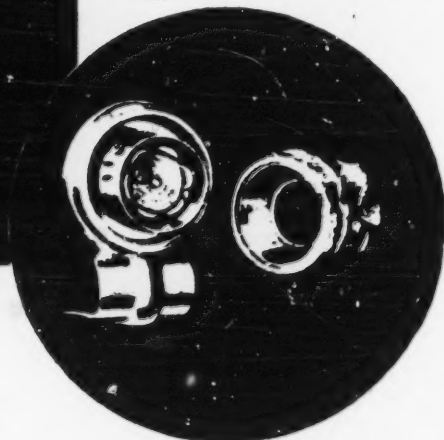
COLORS:

ONYX, ROSE QUARTZ, GREEN QUARTZ

No. 485 Clamp-on chrome metal trim \$1.75
No. 485C for Steering Column mounting or Thru-the-Dash 1.00

REPLACEMENT PARTS FOR No. 485

Replacement Head No. 485-20 \$1.75
Heating Element No. 48 50c



THIS is a Lighter of rare beauty. The head is made of "Onyxoid" beautifully mottled and translucent. Chrome inlays add beauty and smart design. Lens reflects a red glow when unit is ready to take off for lighting.

Patented enclosed switch prevents short circuits. Special silver contacts eliminate oxidation.

Note the deep recess which holds the heating element safely from burning hands or clothing. Operates with quick, easy, positive action.

Pat. Nos. 1710318, 1710311
Other Patents Pending

ALL CASCO LIGHTERS SOLD IN U.S.A. AT WHOLESALE. SUGGESTED RETAILER DISCOUNT: 10% or more, 40% Less than 10, 33 1/3%

CASCO PRODUCTS CORP., Bridgeport, Conn.

Printed in U.S.A.

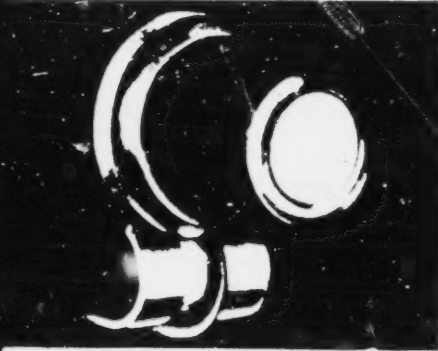
Casco Corp.

262

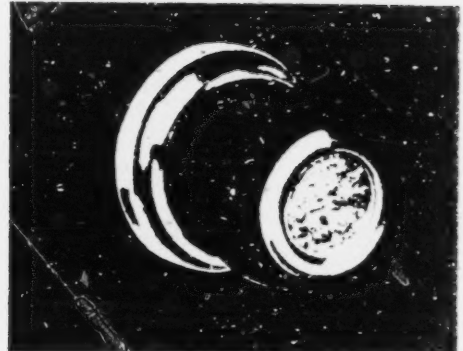
CASCO
REG. U.S. PAT. OFF.

The Automobile
Safety Watch

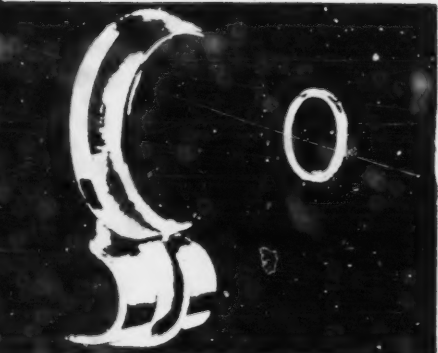
CIGAR LIGHTERS IN ATTRACTIVE COLORS



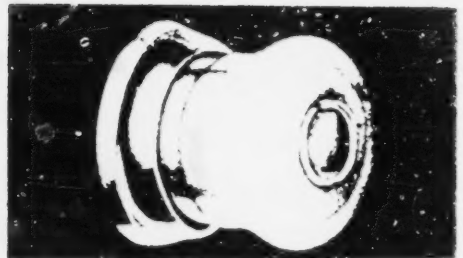
Model No. 1000
Chrome-plated
with chrome-plated
hook bracket



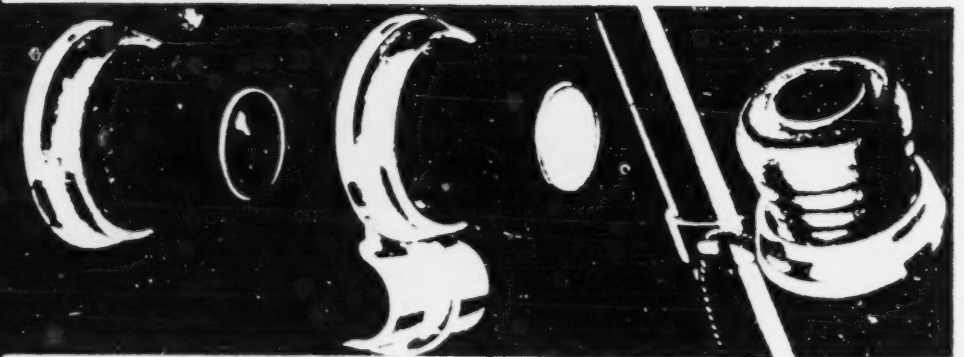
Model No. 1000
Chrome-plated
with chrome-plated
hook bracket



Model No. 1000
Chrome-plated
with chrome-plated
hook bracket



Model No. 1000
Chrome-plated
with chrome-plated
hook bracket



Model No. 1000
Chrome-plated
with chrome-plated
hook bracket

ALL THREE COLORS AVAILABLE FOR EITHER
TYPE OF BRACKET

The well-equipped car wears

CASCO

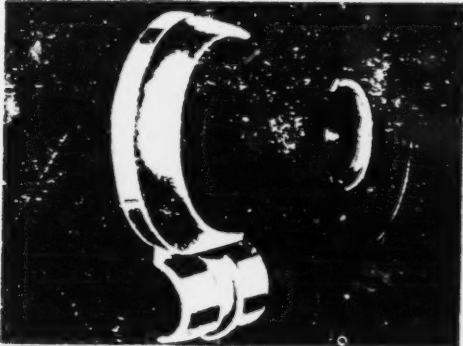
SAFETY NECESSITIES

The Motorist's
Safety Match

CASCO
REG. U.S. PAT. OFF.

262

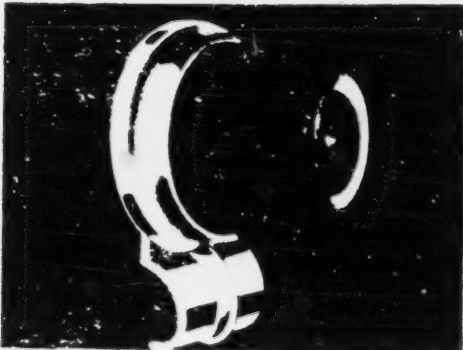
POPULAR PRICED LIGHTERS IN COLORS



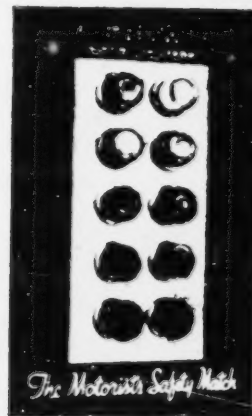
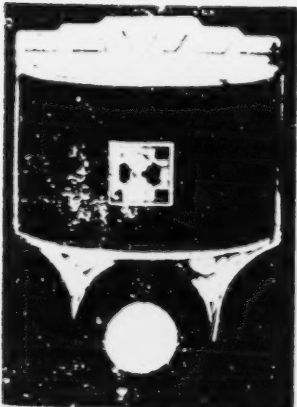
Model No. 100
CHROME-PLATED
WITH LEATHER-GRAINED BODY
No. 100



Model No. 100
CHROME-PLATED
WITH LEATHER-GRAINED BODY
No. 100



Model No. 100
CHROME-PLATED
WITH LEATHER-GRAINED BODY
No. 100



The Motorist's Safety Match

The well equipped car wants **CASCO** SAFETY NECESSITIES

262

CASEO

No. 80

Pat. No. 2,199,111; 2,195,544; 2,044,938
Pat. No. 2,121,421; 2,121,422; 2,121,423
Pat. No. 2,121,424; 2,121,425; 2,121,426
Pat. No. 2,121,427; 2,121,428; 2,121,429

Automatic CIGAR LIGHTER

GUARANTEES A PERFECT LIGHT EVERY TIME
• Here's a lighter that will never be too hot, never too cold... a thermostatically controlled. Adds no smoking pleasure. Approved and supplied by leading car manufacturers and Safety Officials.



THERMOSTAT CONTROLS HEAT
HERE'S HOW IT WORKS



INSTALLED IN 5 MINUTES ON ANY CAR... THROUGH INSTRUMENT PANEL... OR ATTACHED with BRACKET

• Replaces the old style lighter through the instrument panel. Or attached with bracket so you can satisfy customers who object to drilling holes in instrument panel. Comes wired complete ready to hook up.

• Tests prove the new Caseo Automatic Lighter is the fastest selling automotive accessory in years. Dealer sales helps. See next page. Adopted for most 1938 cars.

© 1938 Caseo Co. Printed in U.S.A.

BRACKET ENCLOSED WITH EVERY LIGHTER

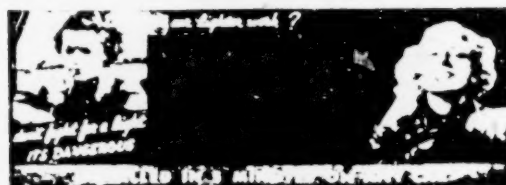


List Price	\$2.50	Choice of 3 Colors
Dealer's Net Price		Pearl White Brown Quara
		Black Silver
		1.35 (10 or more)
		50 (less than 10)
Standard Package 10 Lighters		Shipping Weight 4 Pounds
4 Pearl 4 Brown 2 Black		

CASCO

AUTOMATIC CIGAR LIGHTER

HERE ARE THE **FREE** SALES
HELPS WHICH WILL KEEP
YOUR STOCK OF LIGHTERS
MOVING.



Wipe w. display in five colors. It's a 10" x 10" cut out with steel in back. Lighter box, lined or black. Effective and colorful for window or counter use.

Also Envelope Enclosures Free. Unprinted.

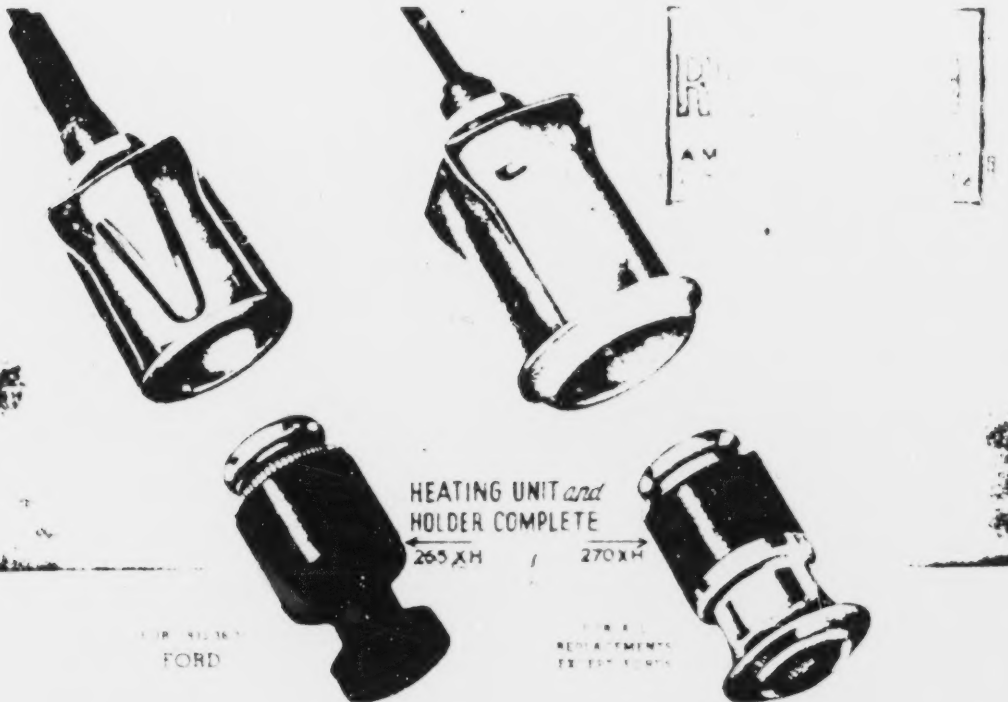
CASCO PRODUCTS CORP.

BRIDGEPORT, CONN.

The well equipped car wears **CASCO** SAFETY NECESSITIES

CASCO

REPLACEMENT STANDARD EQUIPMENT CIGAR LIGHTERS



No. 265X Ford Cigar Lighter, Heating Unit and Holder Complete, \$1.50
 No. 265XH Heating Unit, Holder with Battery, \$1.50
 No. 270X Standard Cigar Lighter, Heating Unit and Holder Complete, \$1.50
 No. 270XH Heating Unit, Holder with Battery, \$1.50
 No. 270XH Heating Unit, Holder with Battery, \$1.50
 No. 270XH Heating Unit, Holder with Battery, \$1.50

REPLACEMENT HEAD for AUTOMATIC LIGHTERS



HEATING UNIT, HOLDER
 COMPLETE, IN
 CASES IN A SET, IN
 AND ELEMENT, \$1.50
 PART NO. 809

The replacement head for automatic lighters
 is made of the finest materials and is
 guaranteed to last. It is made by CASCO
 PRODUCTS CORPORATION.

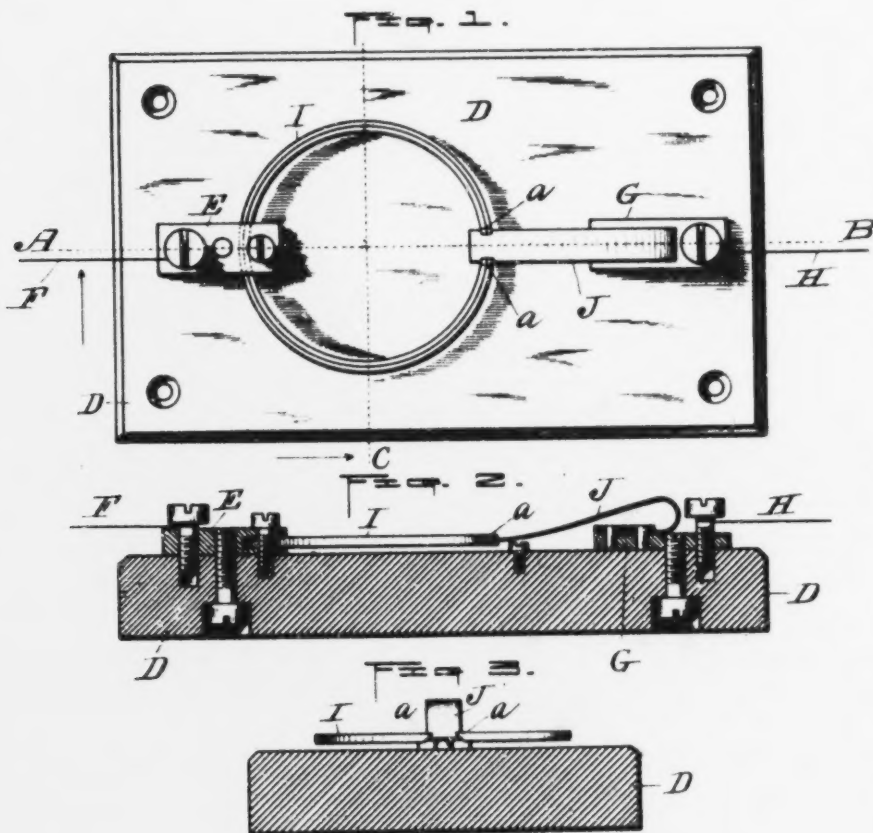
CASCO PRODUCTS CORPORATION BRIDGEPORT, CONN.

(No Model.)

E. F. HAMMARSTRÖM.
COMBINED CUT-OUT AND LIGHTNING ARRESTER.

No. 493,380.

Patented Mar. 14, 1893.



Witness,
W. B. Nourse.
C. Ernest Kesson

Inventor,
Ernst F. Hammarstrom.
By Albert H. Barker, Atty

UNITED STATES PATENT OFFICE.

ERNST FREDRIK HAMMARSTRÖM, OF STOCKHOLM, SWEDEN, ASSIGNOR OF ONE-FIFTH TO AXEL JUNGMARKER, OF WORCESTER, MASSACHUSETTS.

COMBINED CUT-OUT AND LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 493,380, dated March 14, 1893.

Application filed June 3, 1892. Serial No. 135,445. (No model.)

To all whom it may concern:

Be it known that I, ERNST FREDRIK HAMMARSTRÖM, a subject of the King of Sweden and Norway, residing in the city and Province of Stockholm, Sweden, have invented certain new and useful Improvements in a Combined Cut-Out and Lightning-Arrester; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a top or plan view of my improved cut-out and lightning arrester. Fig. 2 is a central, longitudinal section thereof, taken on line A. B. Fig. 1, and Fig. 3 is a transverse section taken on line C, Fig. 1.

The main object of my invention is to provide a cut-out and lightning arrester which may be tested at any time without renewal of any of the parts, which shall require renewal only at long intervals, and which shall be more sure and positive in its action than the usual cut outs and lightning arresters in which a fuse-wire is employed.

Said invention consists of an open bow-spring or ring composed of two different kinds of metal welded together and rigidly connected with a bearing on the main support, and with which bearing the main line wire is also connected; and of a light spring or latch connected with the other bearing, to which the wire communicating with the telephone or other electrical instrument connects, said spring or latch being adapted to engage at its outer end with the open ends of the aforesaid bow-spring or ring. The connection being broken through the expansion of the bow-spring or ring by an electric current of unusual power which releases the spring or latch, and by said disconnection, breaks the current without loss or injury to any of the parts.

In order that those skilled in the art to which my invention appertains may better understand the nature and purpose thereof, I will now proceed to describe it more in detail.

In the drawings, D represents the main support or back-board to which the device is secured.

E, is the bearing with which the main, line

wire F connects, and G the bearing to which is attached the wire H, which communicates with the telephone or other electrical instrument.

The bow-spring I is preferably made in the form of a split ring; that is, cut apart transversely at one point, leaving an opening between the two ends *a a*, a little less in distance apart than the width of the spring J, whose outer end lies horizontally between the said two ends and is there held by the slight pressure of the bow-spring at each side thereof, until such time as said bow-spring shall be expanded to release said spring.

The parts are so adjusted that the usual strength of current employed for telephone and telegraph purposes may pass through uninterrupted, not being of sufficient strength or power to expand the bow-spring a sufficient distance to release the light spring which forms the connection with the other wire; but when a strong electric current comes in contact with the main line as is frequently the case in a thunder storm, it passes along the wire and when it comes in contact with the bow-spring, the powerful current causes said bow-spring to expand and releases the spring held between the two ends of said bow-spring, when said light spring flies up out of the way, and thereby, as will at once be seen, cuts off the farther progress of said strong current. The reason for said expansion of the bow-spring is on account of its being composed of two different metals, one outside of the other, as shown in the drawings, which are in practice welded together.

The inner ring of the completed, welded ring being composed of metal which has greater expanding power under heat than the outer one, consequently causes the two ends to be forced out laterally with the result above stated.

It will be observed that to re-connect the lines, it is simply necessary to force out the bow-spring and adjust the spring or latch in position, when the device is again in readiness for operation, without renewal of any of its parts and at the expenditure of but little time or trouble. It will also be observed that the device may be tested at any time without

the cost of renewal of any of the parts, said testing operation resulting simply in the disconnecting of the parts which may be readily connected again after said testing operation, 5 as above described.

I have found in practice that the device will work with absolute certainty at a temperature much below that required for melting the usual fuse-wire in similar devices.

10 Having now described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

An improved electric cut-out, comprising in combination the main, line wire bearing E;

the expansible open ring or bow-spring I at- 15 tached at a convenient point between its ends to said bearing E; the spring-latch J attached to the other line-wire bearing G and adapted to be engaged with the ends of ring I to close the circuit, said circuit being broken through 20 the expansion of said ring and release of the spring-latch by the electric current, substantially as and for the purpose set forth.

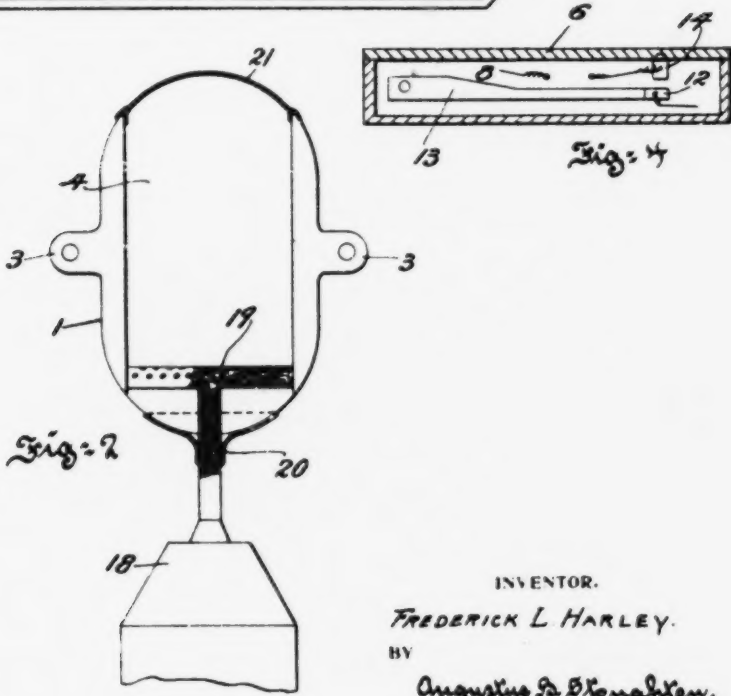
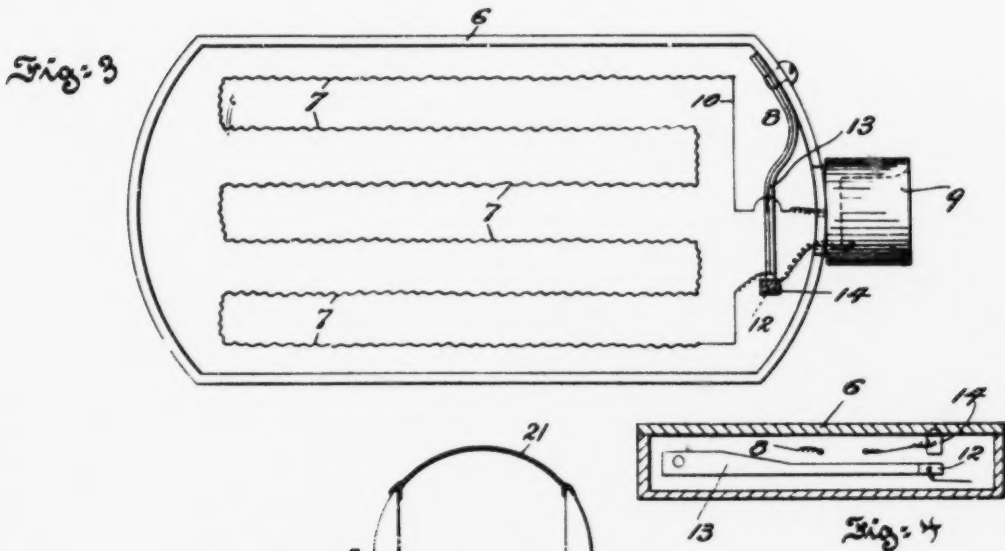
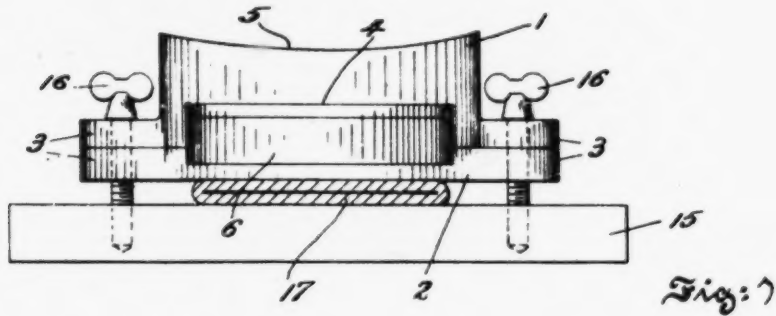
ERNST FREDRIK HAMMARSTRÖM.

Witnesses:

W. H. EDWARDS,

W. HAUPT.

F. L. HARLEY.
APPARATUS FOR REPAIRING PNEUMATIC TIRES.
APPLICATION FILED DEC. 22, 1906.



WITNESSES.
Frank C. [Signature]

INVENTOR.
FREDERICK L. HARLEY.
BY
Augustus R. [Signature]
ATTORNEY.

UNITED STATES PATENT OFFICE.

FREDERICK L. HARLEY, OF QUAKERTOWN, PENNSYLVANIA.

APPARATUS FOR REPAIRING PNEUMATIC TIRES.

No. 852,326.

Specification of Letters Patent.

Patented April 30, 1907.

Application filed December 22, 1906. Serial No. 349,101.

To all whom it may concern:

Be it known that I, FREDERICK L. HARLEY, a citizen of the United States, and a resident of Quakertown, in the county of Bucks and State of Pennsylvania, have invented a certain new and useful Apparatus for Repairing Pneumatic Tires, of which the following is a specification.

The principal object of the present invention is to provide simple, comparatively inexpensive and efficient apparatus for repairing pneumatic tires by vulcanization in a permanent and reliable manner, either on the road or in localities where electric current is obtainable.

To this and other ends hereinafter set forth the invention stated in general terms comprises the improvements to be presently described and finally claimed.

In the drawings I have illustrated apparatus embodying features of the invention, and Figure 1, is an end view partly in section. Fig. 2, is a side view with a part of the device removed. Fig. 3, is a top or plan view with the upper part removed, of an electrical heating unit or device, and Fig. 4, is a transverse sectional view of Fig. 3.

In the drawings 1 and 2, are two members arranged face to face and each having lateral attaching ears 3.

4, is an open ended chamber formed between the members 1 and 2 by longitudinally grooving their abutting faces.

The member 1, is provided with a concaved surface 5, adapted for application to the shoes of tires when the same are in position on the rims of wheels. The member 2, is provided with a flat outer face that is adapted for operation upon inner tubes when the same are flattened.

6, is a receptacle adapted to be placed in the chamber 4 and to be clamped to place therein. Within this receptacle 6, there is arranged a number of heating coils 7, and also a thermostatic cut-out 8.

9, is a socket which may be connected with any suitable source of current. The circuit is by way of the conductor 10, through the coils 11, to a contact 12, carried on the end of an arm 13 made of thermostatic material, such as two strips of different metals properly connected together. The circuit is then by way of the fixed contact 14, when the thermostatic arm is in position for bringing the

two contacts together, which is its normal position. However, when the temperature exceeds that required for proper vulcanization, the thermostatic arm moves into the position shown in Fig. 4 and thus interrupts the circuit. In consequence of this the degree of temperature attainable is automatically limited.

When the device is to be used where there is current the described electrical apparatus is employed. To use the apparatus, a patch is placed upon the part to be repaired and suitable cement, such as can be vulcanized, is employed. The part and the patch are then clamped between the described device and a suitable support and the proper degree of heat continued and applied so as to effect vulcanization. In the case of a flat tube, use may be made of a board 15, provided with clamp screws 16, by means of which the two members of the device are clamped together and the device as a whole is clamped to the tire and patch 17. In patching a shoe the board 15, is applied opposite the face 5, and the tire is clamped between the board and the face 5 and heat is applied to it as above described. When current is not available as for instance on the road, use may be made of a lamp 18, for heating the device. This lamp 18, is provided with a perforated burner 19, into which a wick extends.

20, are plates by means of which the lamp may be clamped to the device in position for holding the burner in the chamber 4.

21, is a perforated plate or cap that may be applied to the end of the device opposite the burner and which operates as a damper.

What I claim is,

1. Apparatus for repairing pneumatic tires which comprises two similar separable members arranged face to face and each having lateral attaching ears and a longitudinal groove on the abutting faces and whereof one is flat and the other convex on its outer face and the grooves of said members constituting a chamber, a heating unit or device detachably applied to the chamber and adapted to impart heat to said members, and clamping means for said ears, substantially as described.

2. Apparatus for repairing pneumatic tires which comprises a housing having a concaved and flat surface, an open ended chamber and a heating unit or device attached to

the chamber and provided with electrical heating apparatus which includes a thermostatic cut-out, substantially as described.

3. Apparatus for repairing pneumatic
5 tires which comprises a housing having a concave and a flat face and provided with laterally extending perforated lugs or ears and with electrical connections, clamping means engaging said ears or lugs, and electrical

heating provisions arranged in the housing and including a thermostatic cut-out for limiting the heat, substantially as described.

In testimony whereof I have hereunto signed my name.

FREDERICK L. HARLEY.

Witnesses:

A. B. STOUGHTON,
FRANK E. FRENCH.

W. S. ANDREWS.
 AUTOMATIC CUT-OUT FOR ELECTRIC HEATERS.
 APPLICATION FILED JAN. 18, 1910.

1,025,852.

Patented May 7, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

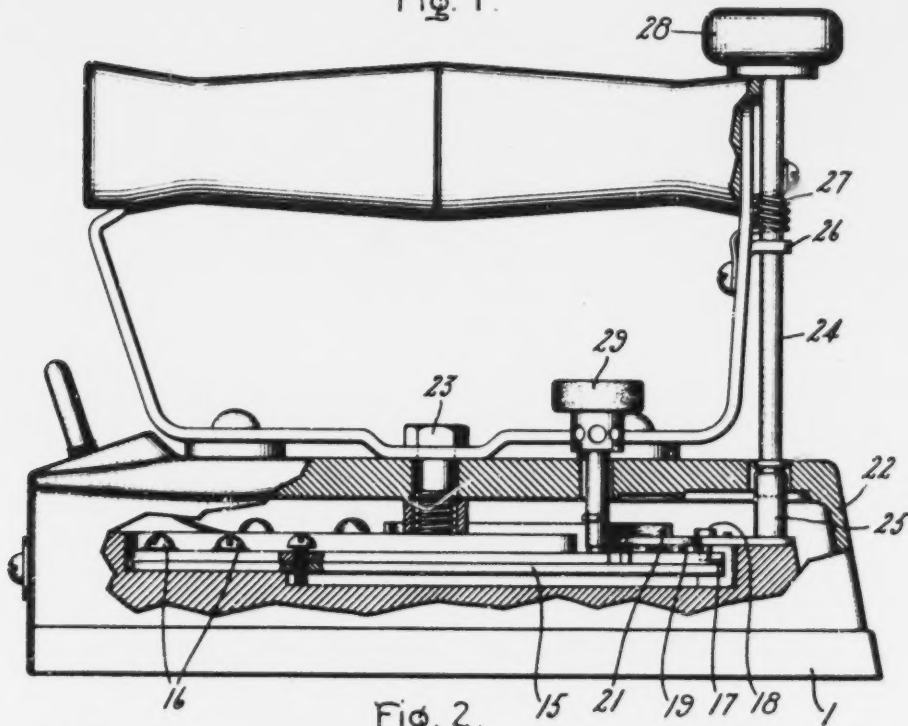
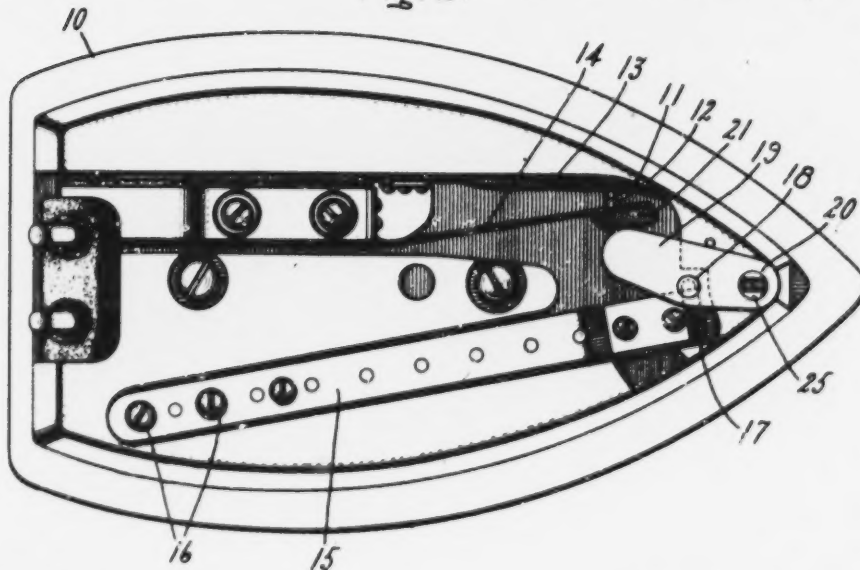


Fig. 2.



Witnesses:

George H. Tilden
J. Ellis Glen

Inventor:

William S. Andrews,

by *Alfred H. Davis*
 His Attorney.

W. S. ANDREWS.
 AUTOMATIC CUT-OUT FOR ELECTRIC HEATERS.
 APPLICATION FILED JAN. 18, 1910.

1,025,852.

Patented May 7, 1912.

2 SHEETS—SHEET 2.

Fig. 3.

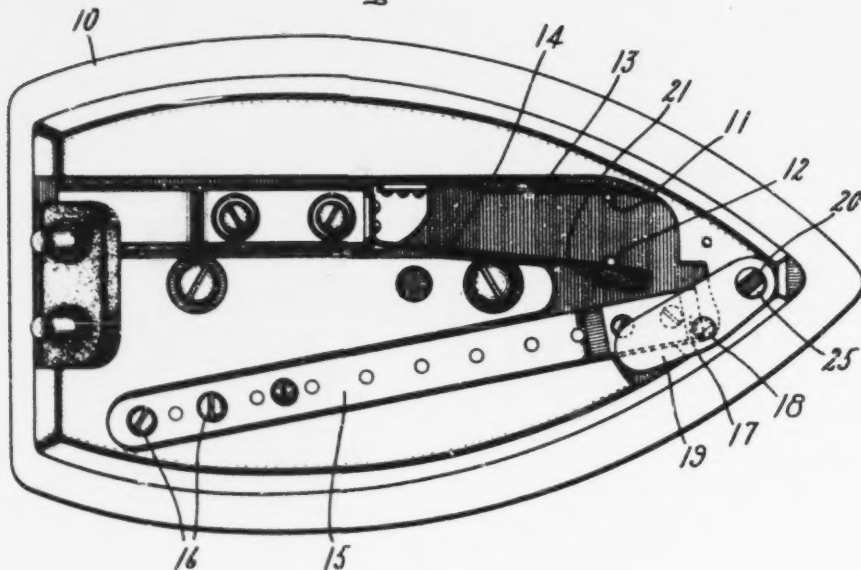
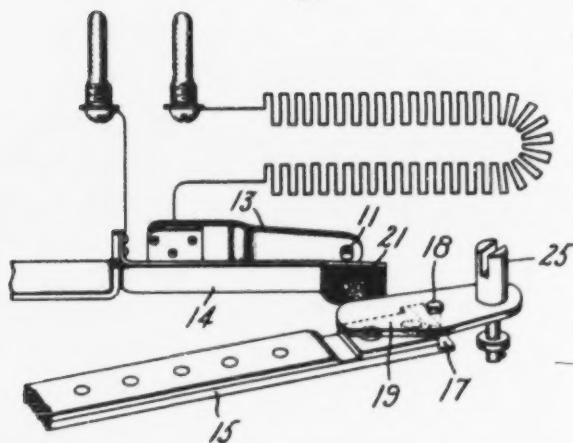


Fig. 4.



Witnesses:

George A. Fildes
J. Ellis Allen

Inventor:

William S. Andrews,
 by *Alfred S. Davis*
 His Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM S. ANDREWS, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

AUTOMATIC CUT-OUT FOR ELECTRIC HEATERS.

1,025,852.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed January 18, 1910. Serial No. 538,739.

To all whom it may concern:

Be it known that I, WILLIAM S. ANDREWS, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Automatic Cut-Outs for Electric Heaters, of which the following is a specification.

This invention relates to electric heaters and has for its object the provision of means whereby the current will be automatically cut off from the electric heater when the temperature reaches a predetermined point.

My invention relates more specifically to electrically heated flat irons and the like.

In devices of this sort it is often desirable that some means be provided whereby the heat will be cut off from the iron in case the temperature exceeds a predetermined degree.

One of the objects of my invention is to provide, in connection with an automatic switch for cutting out the heating unit, means for again closing the switch as well as means whereby the switch may be opened by the operator at any time.

I also provide mechanism for positively latching the switch closed and so arrange the parts that a wide quick break will be given so as to open the circuit effectively and without injury to the switch due to excessive arcing at the contacts.

Other objects of my invention will appear in the course of the following specification in which I have shown my invention embodied in concrete form for purposes of illustration.

In the drawings disclosing one form of my invention, Figure 1 represents a side view of the same, partly broken away to show the operating mechanism; Fig. 2 represents a plan view of the iron with the upper portion removed, the parts of the switch being shown in closed position; Fig. 3 represents a view similar to Fig. 2 with the switch in open position; and Fig. 4 represents a perspective view of the switch and the circuit connections.

Referring to the drawing, 10 represents the body of the iron, which may be of any desired material, such, for instance, as cast iron. The particular shape and construction of this iron, as far as the heating arrangement is concerned, forms no part of

my invention. The heating element may be of any well-known type.

Mounted upon the body of the iron is a switch comprising two contacts 11 and 12 which may be of platinum and when in contact with each other complete the circuit of the electric heater. The contact 11 is mounted upon the resilient metal bar 13. The contact 12 is likewise mounted upon the resilient bar or strip 14. One end of this strip is securely fastened to the body of the flat iron, whereas the end supporting the contact 12 is free to move toward and from the contact 11. This resilient strip 14 is preferably made of such material that it may be heated to a considerable temperature without destroying the resiliency. Normally the contacts 11 and 12 are separated from each other, as shown in Fig. 3.

Mounted longitudinally of the flat iron is a thermostatic element 15. This element may be constructed in any desired manner. I have shown the well-known compound bar type of thermostat which, when heated, will bend due to the difference in the coefficient of expansion of the metals composing it. One end of the thermostatic element is fixed to the body of the heater by screws 16, and the opposite end is free to move with changes of temperature. The free end of this member is adapted to act as a latch for locking switch contacts 11 and 12 in closed position. The latching mechanism comprises a beveled portion 17 on the end of the bar which is adapted to be engaged by a similarly beveled locking bar or bolt 18, preferably of hardened tool steel. This bolt 18 is fixedly mounted in a member 19 pivoted to the body of the iron at 20. The bolt is mounted about midway of the member 19 and the free end of the member is adapted to engage a block of insulating material 21 on the end of the strip 14 adjacent contact 12. The arrangement is such that when the member 19 is turned on its axis, the insulating block 21 is engaged by the end of the member and the contacts 11 and 12 forced into engagement. At the same time the bolt 18 rides along the beveled portion 17 of the thermostatic element and forces the end of the latter downward. By the time the contacts 11 and 12 are in good conducting relation the bolt 18 passes off of the beveled portion 17 and the thermostatic element re-

turns and acts as a barrier for the member 19 so that the switch will be locked in the closed position. A cover 22 is placed over the switch mechanism and the thermostatic element and is held in position by the bolt 23.

In order to operate the member 19 to close the switch, I have provided a rod 24 which enters the slot in the pivot pin 25. This rod 24 projects upward in front of the handle of the iron and is held in place by a guide 26. A spring 27, one end of which is secured to the rod, while the other end is secured to the fixed part of the handle, gives the rod a tendency to turn in a direction to open the switch, or in a counterclockwise direction. On the upper end of the rod 24 is a handle 28 for turning the rod to close the switch.

In order to manually open the switch at any time, I have provided a push button 29 the shank of which projects through the cover of the iron so that the end engages the thermostatic element 15. This push button 29 is arranged conveniently near the handle of the flat iron so that the operator may, by simply pressing a button, force the thermostatic element down and trip the latch, thereby opening the circuit of contacts 11 and 12. A set screw 30 is arranged to adjust the thermostat for various temperatures if desired.

The operation of my device will be very easily understood from the foregoing description. If the temperature exceeds a predetermined degree, the thermostatic element will bend and trip the latch, the spring 27 operating to quickly turn member 19 away from the block 21 to open the switch contacts. In order to again close the switch, the handle 28 is turned. Of course the switch cannot be latched closed until the iron is cooled off sufficiently to permit the thermostatic element to get back to its normal condition. If at any time it is desired to open the circuit without waiting for the iron to reach a predetermined degree of heat, the push button is operated. The circuit will, of course, again be closed by turning the handle 28.

It will be seen that I have provided a very simple arrangement whereby the current may be cut off either automatically or manually and may be again turned on by the operator in a simple manner. The construction is such as to cause a wide quick break to prevent injurious arcing at the contacts.

I have shown my invention embodied in concrete mechanism for purposes of illustration, in accordance with the patent statutes, but it should be understood that I do not limit my invention to the particular construction or arrangement of parts herein described, except in so far as they are limited by the scope of the annexed claims,

since various modifications of my invention will suggest themselves to those skilled in the art without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. The combination with an electric heater, of a normally open switch in the circuit thereof, a thermostatic element for latching said switch closed and releasing the same at a predetermined temperature, and means controlled by the operator for releasing the latch.

2. The combination with an electric heater, of a normally open switch in the circuit thereof, a thermostatic element for latching said switch closed and releasing the same at a predetermined temperature, and means controlled by the operator for actuating the thermostatic element to release the latch.

3. The combination with an electric heater, of a normally open switch in the circuit thereof, a thermostatic element for latching said switch closed, manually operated means for moving the switch to latching position and independent manually operated means for releasing the latch.

4. The combination with an electric heater, of a switch in the circuit thereof biased to open position, a resilient thermostatic element, and means for latching said switch in closed position comprising a beveled member on the thermostatic element and a similarly beveled member associated with the switch.

5. The combination with an electric heater, of a switch in the circuit thereof biased to open position, a thermostatic element, and beveled latching mechanism between the thermostatic member and the switch.

6. The combination with an electric flat iron, of a switch in the circuit thereof biased to open position, a thermostatic element, latching mechanism between the thermostatic member and the switch, manually operated mechanism for moving the parts to latching position, and manually operated mechanism for moving the thermostatic member to release the latch.

7. The combination with an electric flat iron, of a normally open switch in the circuit thereof, a thermostatic element, latching mechanism between the switch and said element, a rotary member for moving the switch to latching position, and a button adjacent the handle for tripping the latch.

8. The combination with an electric flat iron, of a normally open switch in the circuit thereof, a thermostatic element, beveled latching mechanism between the switch and said element, a manually operated member for moving the switch to latching position, and a push button for operating the thermostatic member to trip the latch.

9. The combination with an electric flat-

iron, of a normally open switch in the circuit thereof, means for latching the switch in closed position, an operating member for said latching means, and a releasing member
5 located adjacent the handle of the flatiron and arranged to be operated independently of the operating member.

10 10. The combination with an electric flatiron, of a normally open switch in the circuit thereof, a latching device for holding the switch in closed position, a member ad-

jacent the handle of the flatiron for latching the switch closed, and independent means located so as to be operated from the top of the flatiron for releasing the latch. 15

In witness whereof, I have hereunto set my hand this 17th day of January, 1910.

WILLIAM S. ANDREWS.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.

H. W. DENHARD.
ELECTRIC HEATER.

APPLICATION FILED AUG. 31, 1910.

1,143,572.

Patented June 15, 1915

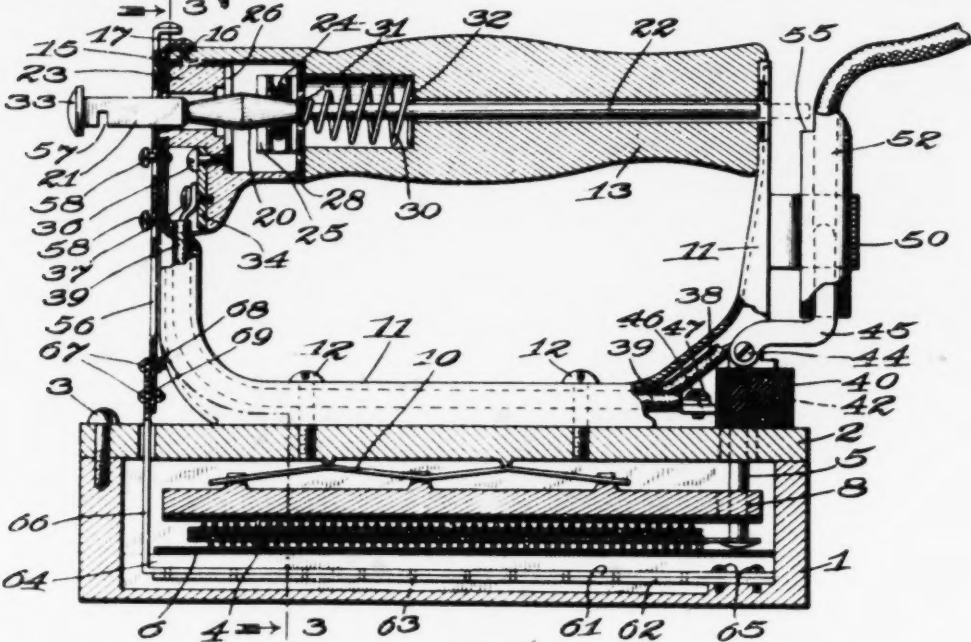


Fig. 1.

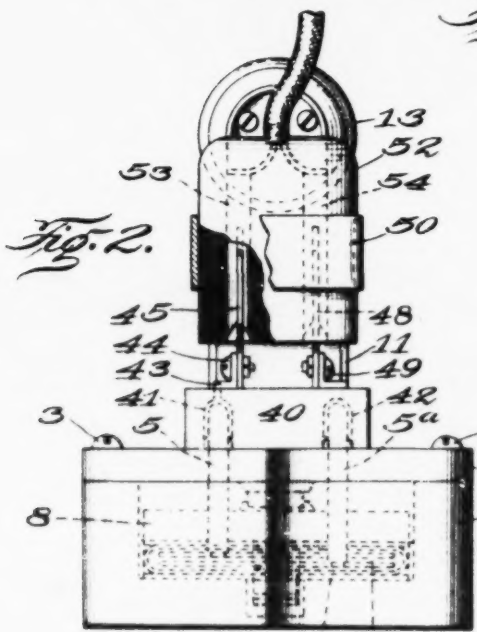


Fig. 2.

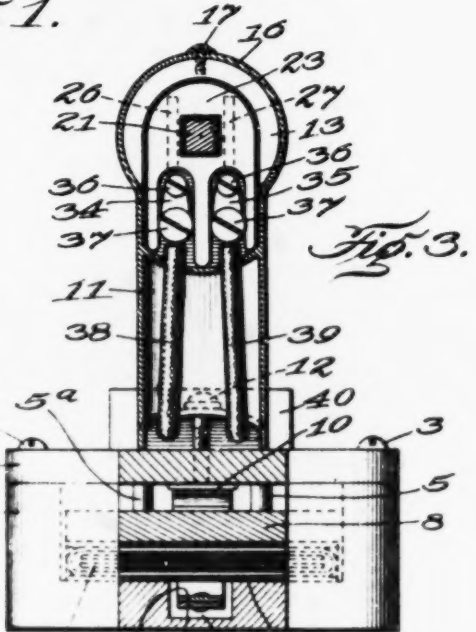


Fig. 3.

Witnesses:
George Haynes
on & O'Brien

Inventor:
Harry W. Denhard.
By Edwin D. Tower, Jr.
his Atty.

UNITED STATES PATENT OFFICE.

HARRY W. DENHARD, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE CUTLER-HAMMER MFG. CO., OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

ELECTRIC HEATER.

1,143,572.

Specification of Letters Patent.

Patented June 15, 1915.

Application filed August 31, 1910. Serial No. 579,845.

To all whom it may concern:

Be it known that I, HARRY W. DENHARD, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Electric Heaters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in electrically heated devices and more particularly to circuit controlling means therefor.

One object of my invention is to provide means for automatically disconnecting the device from circuit when the temperature of said device or a part thereof has attained a predetermined maximum.

Various other objects and advantages of my invention will be hereinafter clearly and fully set forth.

My invention is applicable to various kinds of electrically heated devices and is particularly applicable to electrically heated flat irons.

According to the preferred form of my invention, I provide on the device a circuit controlling switch, as distinguished from the connection plug, for making and breaking the circuit of the device, and provide in conjunction therewith a thermostatic device responsive at a predetermined temperature to cause the control switch to break circuit. Also, I prefer to provide a mechanical interlock between the control switch and the connection plug, necessitating operation of the control switch to disconnect the device from circuit prior to the detachment of the connection plug.

In order to more fully disclose the nature and characteristic features of my invention, I shall describe the device illustrated in the accompanying drawing, a flat iron being chosen for the purpose of illustration. It should be understood, however, that my invention is not limited to the particular structure illustrated, but is susceptible of various modifications and applicable to various other kinds of devices.

In the accompanying drawings, Figure 1 is a longitudinal sectional view through the iron. Fig. 2 is a rear elevation of Fig. 1, certain parts being shown in section. and Fig. 3 is a front section on line 3—3 Fig. 1.

Briefly described the general structure of the iron is as follows: The body portion is formed in two sections, 1 and 2. The section 1 is hollow and forms the bottom and sides, while the section 2 forms the top. The sections are illustrated as being secured together by screws 3. Within the body portion is arranged a resistance unit 4 having terminal lugs 5 and 5^a projecting upwardly through the section 2. The resistance unit is arranged to rest upon one or more layers of insulating material 6, preferably comprising sheets of mica, which insulate the same from the bottom of section 1. Upon the resistance unit is placed a weighted metallic plate 8, one or more layers of insulating material being interposed between said plate and said unit. The resistance unit 4 and the plate 8 are pressed toward the bottom of the iron by a resilient strip bent in a zigzag manner and interposed between said plate 8 and the top section 2 of the iron.

The parts above mentioned have only been briefly described herein, inasmuch as the specific structure thereof is not essential to my present invention and because they have been fully and clearly described in previously issued United States Letters Patent, granted me.

The handle and handle frame may be of any preferred construction. As illustrated, the handle frame 11 is formed of sheet metal and secured to the body portion by screws 12. The handle frame 11 is preferably curved in cross section for strengthening purposes and also for concealing certain electrical conductors, as will be hereinafter described. The handle 13 is supported by the extremities of the frame 11. As will be hereinafter seen, the forward end of the handle contains a switch mechanism, which renders it impractical to secure the supporting frame to the end face thereof. Accordingly, I prefer to provide the forward end of the supporting frame 11 with an enlarged portion 15, substantially covering the forward end face of the handle, and to provide the portion 15 with a flange or lug 16 adapted to be secured to the handle by screws 17. It should be understood, however, that the handle may be secured to a supporting frame in any preferred manner.

The control switch which I have provided

is mounted directly in the handle 13 and is operable from the forward end thereof. In practice, the control switch might assume various different forms. As illustrated, this switch comprises a double inclined operative member 20 preferably circular in cross section throughout its entire length and having extensions 21 and 22 for slidably supporting the same. The extension 22 is arranged to work in a longitudinally extending opening in the handle 13 and for a purpose hereinafter described, the extension 22 is preferably of such length as to protrude from the end of the handle when the member 20 is operated. The extension 21 is arranged to slide longitudinally in a bearing block 23 of insulating material, said block being secured in place in any preferred manner. Surrounding the member 20 and arranged to move longitudinally thereof, is a circular expansible member 24 preferably formed of a helical spring having its ends secured together. The spring 24 is arranged within a suitable contact member 25 also adapted to move longitudinally of the member 20. The contact 25 coöperates with stationary contacts 26 and 27 which may conveniently be attached to the portion 23. At the rear of the contact 24 is provided a stop plate 28.

Briefly described the operation of the switch is as follows: When the member 20 is pressed to the right the spring 24 is expanded until the crest of the operating member is forced through the same, whereupon the spring will rapidly move down the oppositely inclined surface of the member 20 and thereby move the contact 25 into engagement with the contacts 26 and 27 to electrically connect the same. Upon the movement of the member 20 in the opposite direction, the contact 25 will be held in engagement with the contacts 26 and 27 until the crest of the member 20 again passes through the spring 24, whereby the spring will have been expanded. Then the spring will contract and quickly move down the oppositely inclined portion of the member 20, thereby quickly moving the contact 25 out of engagement with contacts 26 and 27. For a purpose hereinafter set forth, I prefer to bias the member 20 in a direction to move the contact 25 out of engagement with contacts 26 and 27. A convenient means for accomplishing this, comprises a spiral spring 30 surrounding the extension 22 and interposed between a flange 31 on the member 20 and a shoulder 32 provided within the handle 13. For facilitating the operation of the switch, I have provided a suitable push button 33 on the end of the extension 21 of the member 20. Set in suitable recesses provided in the insulating block 23 are terminal plates 34 and 35 electrically connected to contacts 26 and 27 respectively by screws 36. Each of these terminal plates is pro-

vided with a binding screw 37. To the binding screw of terminal plate 34 is connected a conductor 38 and to the binding screw of the plate 35 is connected a conductor 39. The conductors 38 and 39 extend from the terminal plates to the rear end of the body portion of the iron, said conductors being inclosed within the sheet metal support 11 for the handle 13. The extremities of the conductors 38 and 39 are adapted to be connected to parts of the connection plug, which I shall now describe.

The terminal lugs of the resistance element of the iron project into an insulating block 40, which may be secured to the plate 2 of the iron in a suitable manner. Within the insulating block 40, (as best illustrated in Fig. 2) are conuacting sleeves 41 and 42 arranged to surround and make electrical contact with the terminal lugs 5 and 5^a respectively of the resistance element. The sleeve 41 is provided with an extension 43 projecting through the top of the insulating block 40 and having secured thereto as by means of a screw 44 a lug 45. The sleeve 42 has an extension 46, best illustrated in Fig. 1, which projects through the front of the block 40 and carries a binding post 47. Suitably secured to the top of the block 40 and arranged parallel to the lug 45 is another lug 48 having a binding screw 49. It will thus be seen that the lug 45 is electrically connected to the terminal lug 5 of the resistance unit and thus in effect forms an extension thereof, while the lug 48 is electrically independent of the terminal lug 5^a of the resistance unit. The conductor 39, however, is electrically connected by binding screw 47 to the extension of sleeve 42, contacting with terminal lug 5^a of the resistance unit, while conductor 38 is connected by binding screw 49 to the lug 48. Hence, when the control switch is operated to electrically connect contacts 26 and 27, the lug 48 will be electrically connected to the terminal lug 5^a of the resistance unit. On the other hand, when the control switch is opened the circuit will be broken between the lug 48 and the terminal lug 5^a. The lugs 45 and 48 are substantially L-shaped, the perpendicular portions thereof projecting into a suitable casing 50 secured to the rear end of the handle frame 11 in any suitable manner. The casing 50 is adapted to receive a suitable plug 52 having therein suitable contact clips 53 and 54 arranged to engage and make electrical contact with the lugs 45 and 48 respectively. The contact clips 53 and 54 of the plug 52 are electrically connected to the supply wires. Accordingly, when the plug 52 is inserted in place and the control switch closed, current will flow from one of the supply wires to the contact clip 54, lug 48, conductor 38, through the control switch by conductor 39

1,143,579

to terminal 5^a of the resistance unit, thence through said unit to terminal lugs 5 thereof, thence to lug 45 and contact clip 53 of the plug 52 to the other supply wire. Circuit through the resistance unit may thus be controlled at will by operation of the control switch located in the handle of the iron.

It is well recognized that a quick make and break of an electrical circuit is always preferable. The control switch, which I have provided, insures such a make and break of the circuit, while a very slow make and break would result upon the insertion and withdraw of the connection plug 52. I, therefore, desire to provide an interlock between the connection plug 52 and the control switch, which will prevent insertion or withdrawal of the connection plug, except when the control switch is in open position. This will insure the circuit being always made and broken by the control switch. Various means might be provided for accomplishing this result. The means which I have illustrated comprises the extension 22 on the operating member of the control switch. As previously set forth when the operating member is moved to close the control switch, the extension 22 is caused to project from the rear end of the handle. I have, therefore, provided on the connection plug 52 a shoulder 55, into the path of which the extension 22 is adapted to project as illustrated in dotted line, Fig. 1, when the control switch is closed. The plug 52 can only be inserted and withdrawn by a vertical movement thereof and hence so long as the extension 22 remains in the dotted line position, it prevents withdrawal of the plug 52. Likewise, it prevents insertion of the plug 52, if an attempt is made to insert the plug while the control switch is closed.

The control switch as previously described is biased to open position. For holding the control switch in closed position, I have provided a sliding plate 56 adapted to enter a notch 57 in the operating member of said switch. This plate may be conveniently attached to the portion 15 of the handle frame 11 by screws 58 passing through slots in said plate, said slots permitting the desired longitudinal movement of said plate. The plate 56 is preferably provided with an extension projecting slightly above the top of the handle 13 to facilitate movement of said plate to release the switch at will. The plate 56 is connected to the thermostatic device which I shall now describe.

While in practice, the thermostatic device may be of any preferred construction, I have illustrated the same as merely comprising two metallic strips 61 and 62 having different expansion characteristics. Of course, various materials may be used in practice. Very satisfactory results can be

obtained by forming one strip of brass and the other of steel. These strips are preferably secured together by rivets 63 at numerous points throughout their length. The inner face of the base of the iron is preferably provided with a longitudinal recess 64 for accommodating the strips 61 and 62 to relieve the same from all pressure of the resistance unit and to permit freedom of movement of the strips under the influence of heat. In practice, I prefer to secure the extremities of the strips to the iron adjacent to its rear end as by screws 65 and to so superimpose one strip upon the other that upon predetermined rise in heat the free ends thereof will be drawn downwardly. One of the strips 61 or 62 is provided with an extension 66 projecting upwardly through the top of the iron and secured as by means of screws or bolts 67 to the end of the plate 56. Thus, when the thermostatic strips are effected by heat, they will move the plate 56. Accordingly, if the strips are so arranged as to buckle downwardly when the heat of the iron rises to a predetermined degree, they will draw the plate 56 downwardly, thereby releasing the control switch which will then move to open the circuit through the iron.

I desire to so design the thermostatic device that under normal temperature conditions, it will exert a sufficient upward pressure on the plate 56 to retain said plate in the notch 57 and thus insure retention of the control switch in closed position. In practice, the thermostatic device may be arranged in different locations. In electric irons, however, I deem it preferable to locate the same as illustrated, inasmuch as it will be subjected directly to the heat of the working face of the iron. In other words, it is the temperature of the working face of the iron that it is desired to regulate and the thermostat will naturally function with the greatest efficiency when located contiguous to the working face as illustrated.

In actual use it may be desired to vary the maximum temperature of the iron and accordingly, I desire to make the thermostatic device adjustable to meet the different requirements. The desired adjustment may be secured in various ways. With the particular thermostatic device illustrated, the desired adjustment can readily be obtained by providing slots 68 and 69 in the extension 66 of the thermostatic device through which the screws or bolts 67 extend. With such an arrangement it will be seen that the plate 56 may be adjusted relatively to the thermostatic device, thereby varying the distance which the plate projects into the notch 57 under normal temperature conditions. Thus the thermostatic device could be made to withdraw the plate 56 from the notch 57 upon different predetermined movements

thereof. For instance, if it be desired to cause the release of the control switch upon a slight rise in temperature of the iron, then the plate should be adjusted relatively to the thermostatic device so that it will only project a slight distance into the notch 57 under normal temperature conditions. On the other hand, if it be desired to allow the temperature of the iron to rise to a higher degree, the plate 56 should be adjusted to project farther into the notch 57 under normal temperature conditions.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination with an electrically heated device having a handle, of a control switch for said device biased in a direction to disconnect the same from circuit, said switch having means for retaining the same in circuit-closing position and having an operating member and a tripping member adjacent to said handle.

2. In combination, an electric iron, a quick acting control switch arranged within the handle thereof and operable at will and thermostatic means having its temperature responsive portion in proximity to the working face of the iron for controlling said switch.

3. In combination, an electrically heated iron provided with connection terminals, a quick acting control switch therefor mechanically independent of said connection terminals and a thermostatic device arranged within said iron and responsive to the thermic conditions of the working face thereof, said thermostatic device controlling said switch to automatically disconnect said iron from circuit under predetermined thermic conditions.

4. In combination, an electric iron, a thermostatic device arranged within said iron in close proximity to the working face thereof, and an inherently quick make and break switch controlled by said thermostatic device to disconnect the iron from circuit under predetermined thermic conditions, said thermostatic device comprising an elongated member formed of strips of different materials secured together at a plurality of points, said member extending substantially the entire length of the working face of the iron.

5. In combination, an electrically heated iron, a detachable connection plug carried thereby, a quick acting control switch operable at will to make and break the circuit of said iron, and means necessitating operation of said switch to disconnect said iron from circuit prior to the removal of said connection plug.

6. In combination, an electrically heated iron, a detachable connection plug carried thereby, a switch carried by said iron for controlling the circuit therethrough, and a mechanical interlock between said switch and said connection plug for preventing detachment of the latter until said switch has been operated to open the circuit of said iron.

7. In combination, an electrically heated iron, a detachable connection plug carried thereby, a switch carried by the handle of said iron for controlling the circuit thereof, and a mechanical interlock between said switch and said connection plug for preventing detachment of the latter until said switch has been operated to disconnect the iron from circuit.

8. An electrical heating device having a handle, a switch in said handle for controlling the circuit of said device and temperature responsive means for controlling the operation of the switch.

9. An electric heating device having a handle, a switch in said handle normally biased in one direction, temperature responsive means normally adapted to restrain said switch against the biasing means and operable to release said switch under predetermined temperature conditions.

10. An electric heating device having a switch normally biased to open position, means for holding said switch in closed position, a thermostatic device for controlling said means to release said switch, a connector plug and means whereby the plug can be removed only when the switch is open.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

HARRY W. DENHARD.

Witnesses:

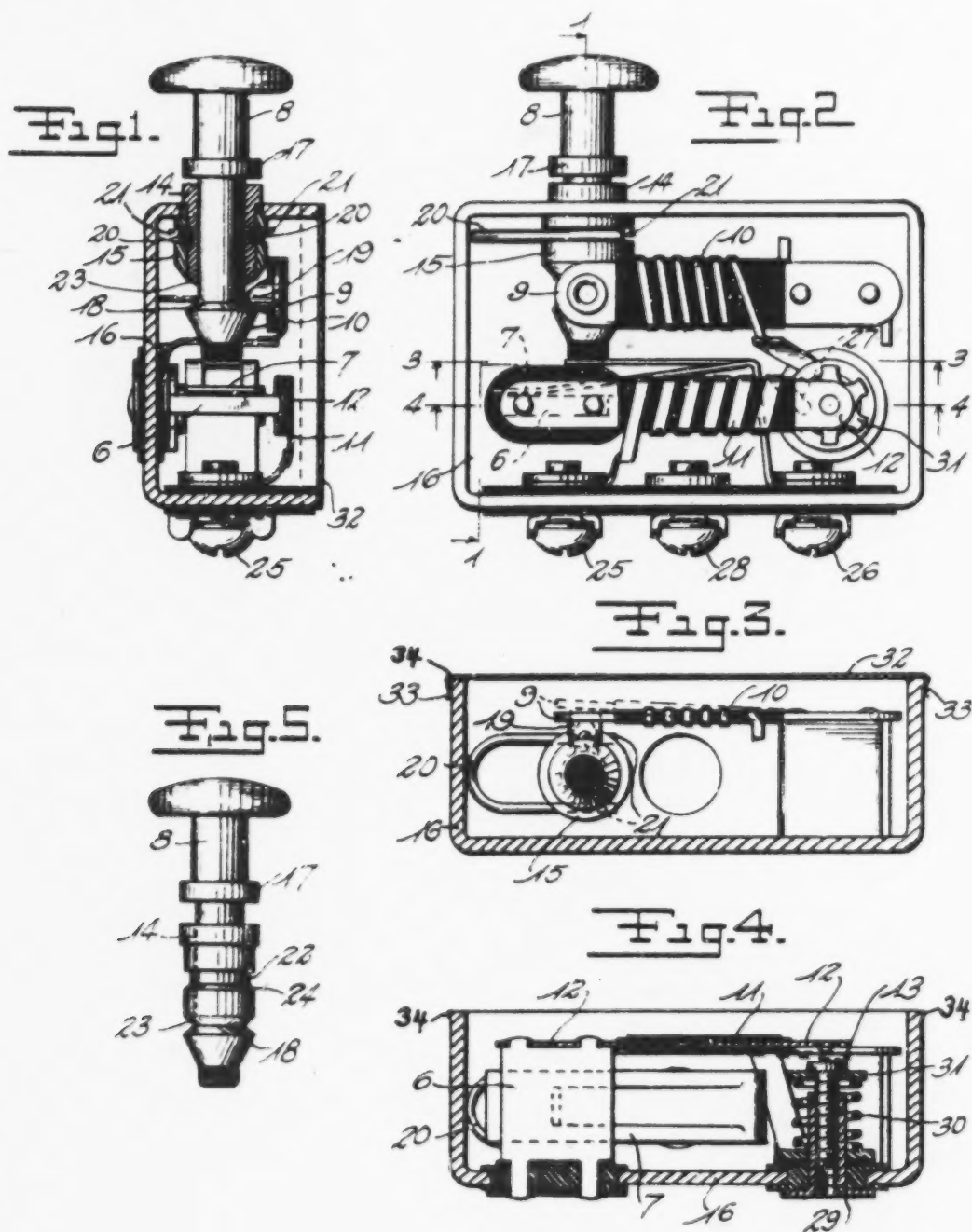
FRANK H. HUBBARD,
GEORGE HAYNES.

J. F. CAVANAGH.
LOCK SWITCH.

APPLICATION FILED MAR. 9, 1918.

1,294,045.

Patented Feb. 11, 1919.



INVENTOR
John F. Cavanagh
BY *Mitchell & Allen*
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN F. CAVANAGH, OF MERIDEN, CONNECTICUT, ASSIGNOR TO CONNECTICUT TELEPHONE & ELECTRIC COMPANY, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LOCK-SWITCH.

1,234,045.

Specification of Letters Patent.

Patented Feb. 11, 1919.

Application filed March 14, 1918. Serial No. 222,312.

To all whom it may concern:

Be it known that I, JOHN F. CAVANAGH, a citizen of the United States of America, residing at Meriden, Conn., have invented a new and useful Lock-Switch, of which the following is a specification.

My present invention relates to what are generally known as "lock switches", particularly for use on motor vehicles, which are designed to be "locked" or rendered inoperative when the machine is left unattended.

The objects of the invention generally are to provide a switch of this character of simple, inexpensive and entirely practical construction.

Another object is to combine the locking and controlling functions all in a single member so that by means of a single "controller" the switch may be operated to open or close the circuit or may be locked or rendered entirely inoperative.

Briefly stated, the invention resides in the combination with a suitable supporting base and circuit contacts mounted thereon, of a plunger or operating member having a certain limited movement on the base for controlling the circuit contacts and adapted to be entirely removed and separated from the base for the purpose of rendering the switch inoperative. In connection with said plunger there may be provided a thermostatically controlled latch for holding the plunger in a predetermined position and the invention embodies various other features and details of construction all as will later appear.

In the accompanying drawing I have illustrated the invention embodied in a practical commercial form but would have it understood that changes and modifications may be indulged in without departure from the true spirit and scope of the invention.

In said drawing:—

Figure 1, is a vertical sectional view of a switch constructed in accordance with and embodying the invention, said view being taken substantially on the plane of the line 1—1 of Fig. 2.

Fig. 2, is a view of the switch mechanism with the side wall of the switch casing removed.

Figs. 3 and 4 are sectional views taken

substantially on the planes of the lines 3—3 and 4—4 respectively of Fig. 2.

Fig. 5, is a detail view of the detachable operating key or plunger.

The switch illustrated is a so-called automatic ignition switch of the character disclosed in my Patent #1,232,458 consisting generally of a relatively stationary contact 6 and a spring contact 7, the latter being forced into engagement with the former by means of an operating key or plunger 8 which plunger is normally retained in the circuit-closed position by means of a thermostatic bar 9 which, when the circuit is left in closed condition, is warped through the action of a heating coil 10 engaged thereabout to release the plunger and thus permit the spring contact to separate from the stationary contact. This heating coil may be cut into circuit automatically by means of a primary heating coil 11 connected in the ignition circuit and coiled about the thermostatic bar 12 which, as it becomes heated due to the continued closed condition of the ignition circuit, makes engagement with a contact 13 forming a terminal for the heating coil 10.

The combined lock or key and switch operating plunger has a limited movement for the purpose of controlling the switch contacts and is removably supported so that it may be entirely disconnected and detached from the switch structure. In the present disclosure this is accomplished by slidably supporting the plunger within a bushing 14 and by detachably securing this bushing within a socket or tubular guide 15, the latter forming a part of, or being secured to the casing 16, which in this instance forms a base for the switch parts. The limited circuit-controlling movements of the plunger are provided for by the shoulders 17 and 18 on the plunger which limit the movements of said plunger within the tubular bushing 14. The lower shoulder 18 in the present disclosure is beveled to cooperate with a beveled lug 19 on the end of the thermostatic bar 9. The double bevel or inclination of this shoulder 18, as illustrated, enables the plunger being shifted either inward or outward against the tension of the thermostatic latching bar 9 and at the same time enables said

latching bar to yieldingly hold the plunger in either of the positions to which it may be shifted.

The supporting bushing 14 is removably secured in place in the present disclosure by a hairpin spring 20 engaged about the tubular guide 15 and with the spring arms thereof extending in through slots 21 in the sides of said tubular guide into position to engage in an annular locking groove 22 formed in the supporting bushing. The lower end of the supporting bushing is preferably beveled as indicated at 23 to spread the spring arms apart as the key is being inserted in the switch and the lower shoulder or edge of the groove 22 in the bushing may be beveled somewhat as indicated at 24 to facilitate the removal of the plunger.

When the plunger is engaged in its seat in the switch as in Fig. 1, it may be shifted either out or in to open or close the circuit at will. If left in the circuit-closed position and the circuit is closed at other points, the latching thermostat will operate to automatically release the plunger and thus permit separation of the circuit contacts. If it is desired to lock the switch inoperative, it is merely necessary to pull the switch plunger and its supporting bushing out of its socket, leaving the switch contacts separated, with no means for bringing them into closed relation. The key plunger, with its associated bushing, is relatively light and small and so can easily be carried about. When it is desired to close the circuit again, the plunger is simply forced to its seat in the socket provided therefor and when thus engaged in its socket may be shifted to either the open or the closed circuit position. In inserting the plunger the upper shoulder 17 on said plunger acts as an abutment for forcing the bushing down into the tubular guide or socket, and in removing the plunger the lower shoulder 18, serves as an abutment engaging the lower end of the bushing to carry the bushing along with the plunger.

The various parts of the switch may be suitably mounted within the supporting base 16 and the necessary circuit terminals will be provided therefor. In the illustration there is provided one terminal 25 for the primary heating coil 11, and another terminal 26 for the spring contact 7, one end of the primary heating coil is connected with the thermostatic bar 12 on which it is mounted, as indicated at 27, and said bar is directly connected with the stationary contact 6, as shown in Fig. 4 so that under normal working conditions the ignition circuit will be completed by way of terminal 25, primary heating coil 11, thermostatic bar 12, stationary contact 6, spring contact 7 and terminal 26. If the circuit remains closed for a dangerous length of time, as

predetermined upon, coil 11 heats the bar 12 sufficiently to cause it to make contact with the terminal 13 for the secondary heating coil 10, which latter then quickly heats up the thermostatic bar 9 to such an extent as to cause said bar to release the plunger and allow the spring contact to separate from the stationary contact and thus break the ignition circuit. The circuit for the secondary heating coil 10 may be completed through the switch base 16, which is usually in the form of a metallic box, by fastening the thermostatic bar 9 directly to the box, by connecting one end of the heating coil 10 with the bar and by providing an external terminal 28 in electrical connection with the box.

The terminal 13 for the heating coil 11 is of novel construction, comprising as it does, a screw stud engaged within a tubular bushing 29 set in the rear wall of the box or casing 16, there being a spring 30 coiled about said bushing and engaged between the inner wall of the box and an abutment washer 31 at the contact end of said contact screw 13. This spring, acting as it does against the inner wall of the box, serves to retain the bushing in place, which is entered from the outside of the box and at the same time acts frictionally to hold the contact screw in its adjusted position. The outward end of the contact screw may be slotted, as indicated, or otherwise constructed for engagement by an adjusting tool such as a screwdriver, so that the point at which the main thermostatic bar 12 will close circuit through the unlatching heating coil may be readily determined.

The invention will from the foregoing be seen to possess many advantages, particularly in the ease with which the switch may be locked or rendered inoperative and again be made operative and controlled as desired.

The open side of the switch casing may be closed by a suitable cover such as that indicated at 32, having flanges 33 engaged over ribs or flanges 34 at the edge of the casing.

I claim:

1. In a switch of the character described, a supporting base, circuit controlling contacts on said base, a removable operating member for said contacts, a support for said operating member readily removable from the supporting base and arranged when engaged on the supporting base to permit movement of the operating member for the opening and closing of the circuit through the switch contacts and means for detachably securing said support for the operating member on the supporting base, whereby said support and the operating member carried thereby may be entirely detached from the supporting base, and whereby when said support is engaged with the supporting base the operating member may be actuated to

operate the switch contacts for opening or closing the circuit, and means whereby the operating member may be left in position with the contacts in open or closed circuit position.

2. In combination, switch contacts, a supporting bushing, a plunger for controlling the switch contacts slidably engaged in the bushing, a socket for the bushing and means for yieldingly securing said bushing in the socket.

3. In combination, switch contacts, a supporting bushing having a locking shoulder on the side thereof, a contact controlling plunger slidably mounted in the bushing and having shoulders for engagement with the opposite ends of the bushing, a socket for supporting the bushing with the plunger carried thereby in operative relation to the switch contacts, and securing means engaged with the shoulder on the bushing.

4. In combination, switch contacts, a plunger for controlling said contacts, a removable bushing for supporting the plunger in operative relation to the contacts, and spring means for yieldingly and removably securing said bushing in such position.

5. In combination, a switch base provided with a socket, contacts mounted on said base, a bushing removably engageable in said socket, spring means engaging said bushing to yieldingly retain the same in the socket, a plunger slidably engaged in the bushing for controlling the switch contacts, and shoulders on the plunger for engagement with opposite ends of the bushing to limit the switch operating movements of the plunger, and arranged to form abutments for the bushing when the bushing is inserted in or removed from the socket by means of the plunger.

6. In combination, switch contacts, a tubular guide, a hairpin spring embracing said tubular guide and having one arm thereof projecting within the guide, a bushing engageable within the tubular guide and

provided with an annular groove to receive the inwardly projecting spring arm aforesaid, and a contact controlling plunger having a limited sliding movement within the bushing.

7. As an article of manufacture, a supporting bushing having an annular locking groove therein for engagement by securing means and a switch controlling plunger having a limited sliding movement in said bushing.

8. The combination in a switch, of a casing, an interiorly threaded post passed through said casing from the outside to the inside thereof, a contact screw rotatably engaged in said tubular post at the inside of the casing and provided with means at its outer end for engaging with an operating tool, and a coil spring engaged about the tubular post between the inner wall of the casing and the inner end of the contact screw to frictionally retain said screw in the position to which it is adjusted from the outside of the casing.

9. As an article of manufacture, a pull-out switch operating plunger and a supporting bushing having limited sliding movement thereon and provided with a locking shoulder for engagement with a locking device when said plunger with its bushing is pushed into a seat in a switch.

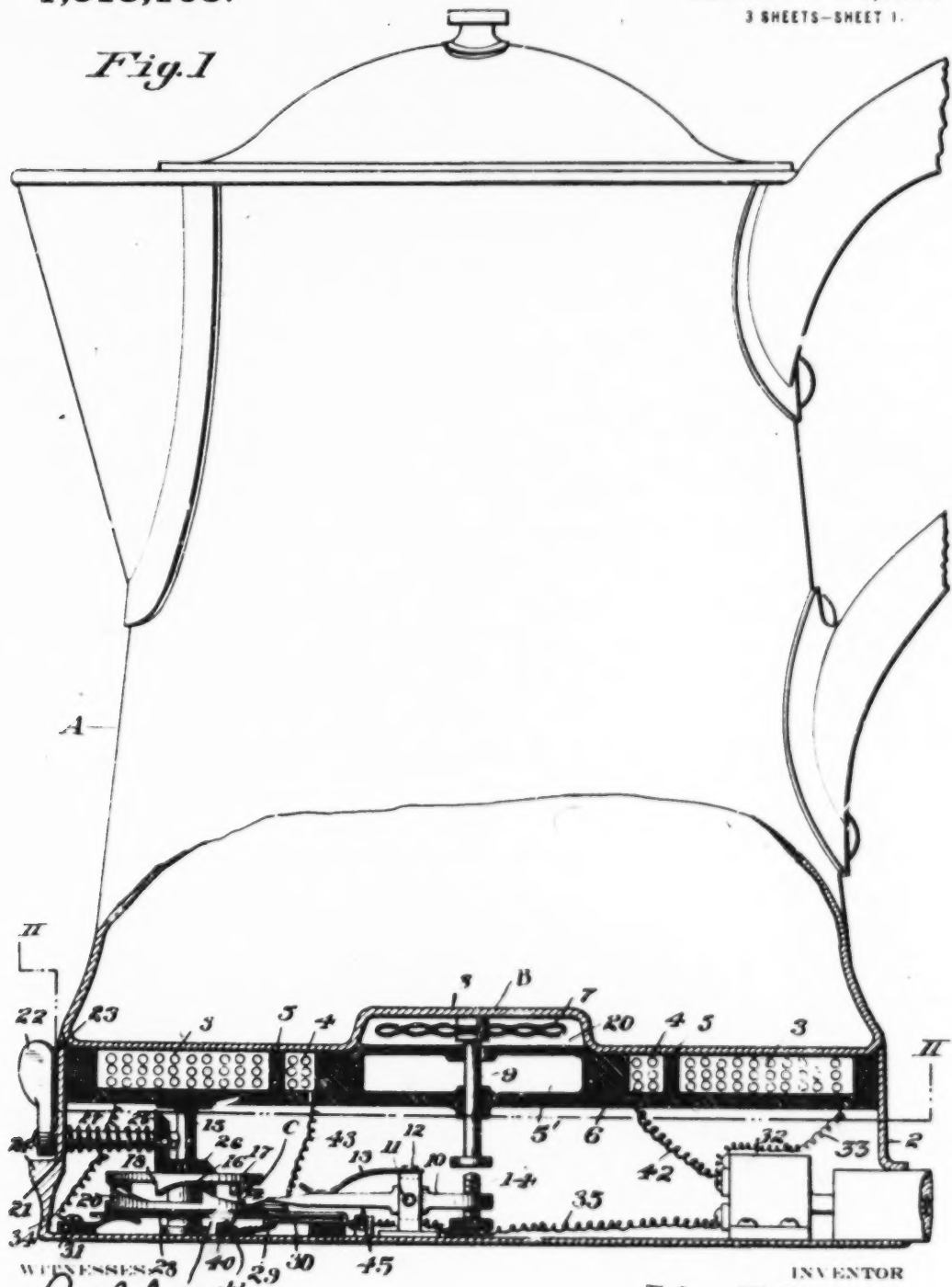
10. In a switch of the character described, a supporting base having a tubular guide, a bushing removably engaged in said guide, a plunger having a limited sliding movement in the bushing, circuit controlling contacts on the base positioned to be controlled by the plunger in the push-and-pull movements thereof and spring means for yieldingly securing the bushing in the tubular guide therefor and arranged to yield on the application of a pulling force to the plunger to enable the plunger and attached bushing being entirely withdrawn from the base.

JOHN F. CAVANAGH.

J. F. NEWSOM.
AUTOMATICALLY CONTROLLED ELECTRIC COFFEE COOKER.
APPLICATION FILED MAY 29, 1916.

1,318,168.

Patented Oct. 7, 1919.
3 SHEETS—SHEET 1.

Fig. 1

WITNESSES
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J. F. NEWSOM.
AUTOMATICALLY CONTROLLED ELECTRIC COFFEE COOKER.
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1,318,168.

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3 SHEETS—SHEET 2.

Fig. 5.

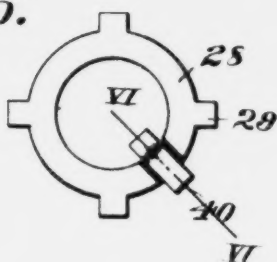


Fig. 6

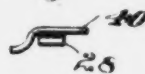


Fig. 2

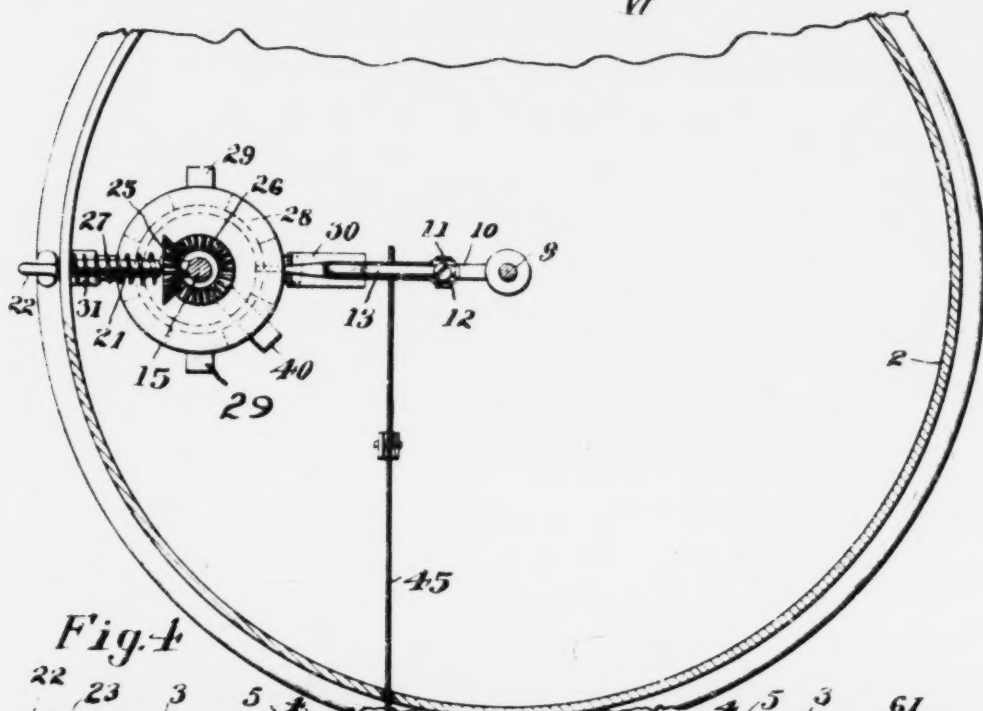
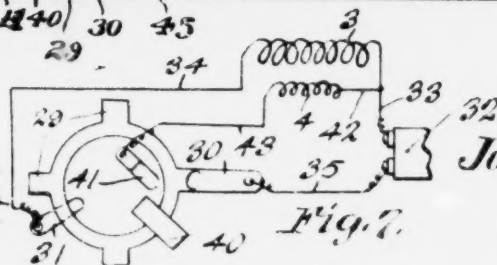
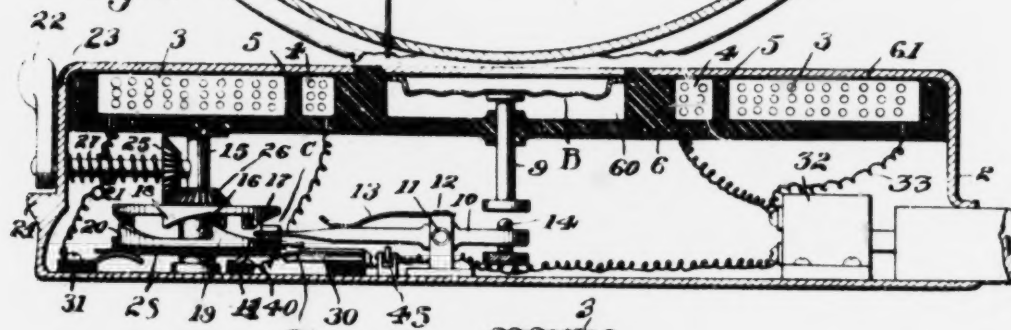


Fig. 4



WITNESSES:
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INVENTOR
John F. Newsom
Strong & Townsend

ATTORNEYS

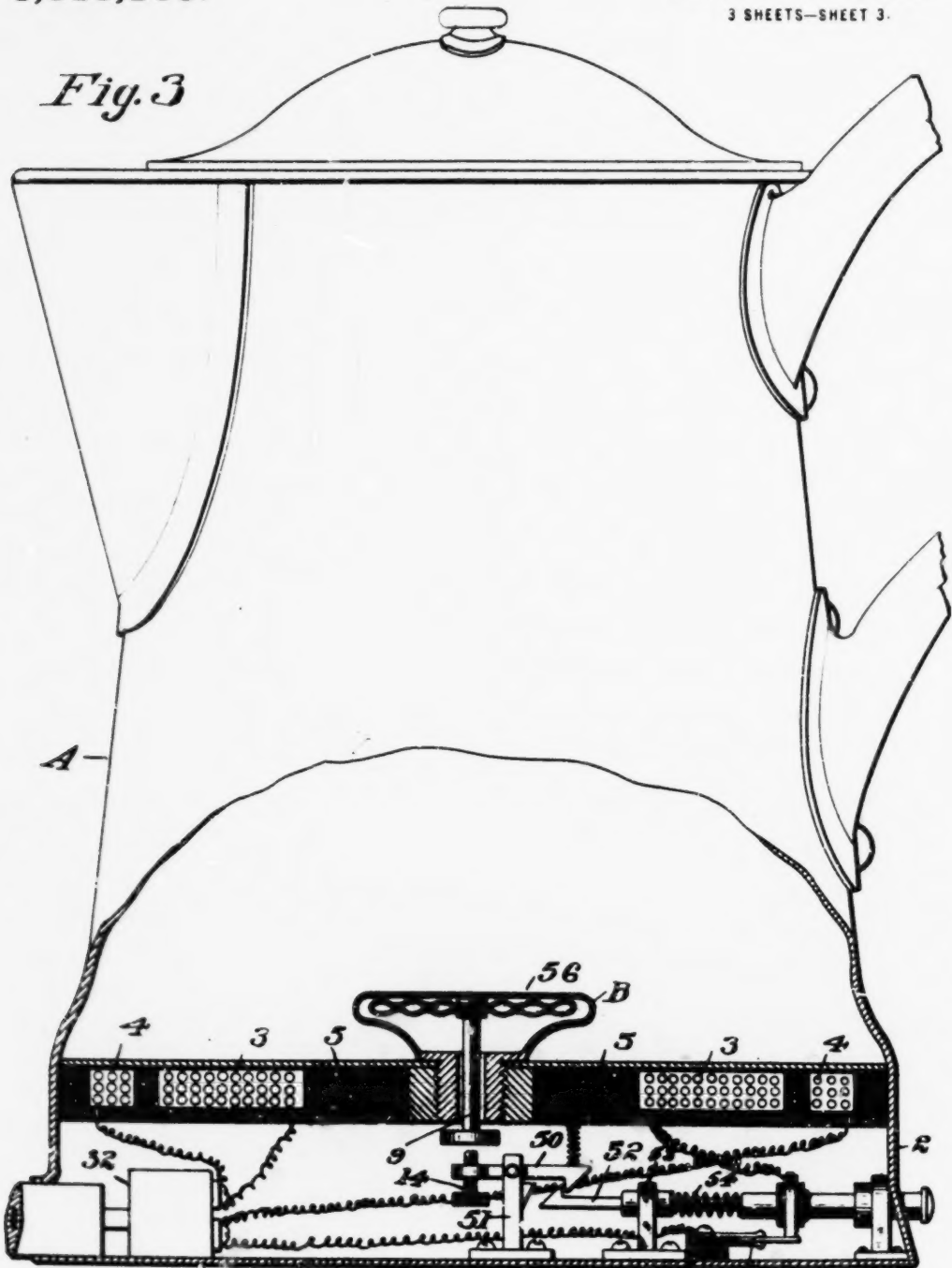
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J. F. NEWSOM.
AUTOMATICALLY CONTROLLED ELECTRIC COFFEE COOKER.
APPLICATION FILED MAY 29, 1916.

1,318,168.

Patented Oct. 7, 1919.
3 SHEETS—SHEET 3.

Fig. 3



WITNESSES:

Richard Johnson
B. R. Abbott

C 55 INVENTOR
John F. Newsom

Henry Johnson
ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN F. NEWSOM, OF PALO ALTO, CALIFORNIA.

AUTOMATICALLY-CONTROLLED ELECTRIC COFFEE-COOKER.

1,318,168.

Specification of Letters Patent.

Patented Oct. 7, 1919.

Application filed May 29, 1916. Serial No. 100,528.

To all whom it may concern:

Be it known that I, JOHN F. NEWSOM, a citizen of the United States, residing at the city of Palo Alto, county of Santa Clara, and State of California, have invented new and useful Improvements in Automatically-Controlled Electric Coffee-Cookers, of which the following is a specification.

This invention relates to an automatically controlled electric coffee cooker, and particularly to improvements on my co-pending application entitled "Electric coffee cooker," filed February 7, 1916, Serial Number 76,586.

An object of the present invention is to provide a simple, cheaply manufactured, economic electric cooker provided with means for regulating the time of cooking coffee, or other beverages and foods, and particularly to provide a thermostatic switch control adapted to be actuated by the temperature obtained within the cooking receptacle, or other object heated, to intermittently or permanently break the electric circuit through the heating elements when predetermined temperatures are reached within the cooker. Further objects will hereinafter appear.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a central, vertical section through the cooker.

Fig. 2 is a plan view on line II—II of Fig. 1.

Fig. 3 is a view similar to Fig. 1, showing a modification of the automatic switch.

Fig. 4 is another view similar to Fig. 1, showing the cooker removed.

Fig. 5 is a plan view of the switch member 28.

Fig. 6 is a section taken on the line VI—VI of Fig. 5.

Fig. 7 is a diagrammatic view, showing the wiring diagram employed.

Referring to the drawings in detail, A indicates the coffee pot proper and 2 the base upon which it is mounted. Any suitable shape may be given to the pot, which will hereinafter be termed a "receptacle," but the preferable shape is here shown. The receptacle is heated by a main heating element 3 and an auxiliary element 4. These elements are mounted in the upper portion

of the base and are suitably insulated from each other and the base by means of a heat-insulating material 5. The main novelty in the present invention resides in the provision of the thermostat, generally indicated at B, and the automatic switch, generally indicated at C; the thermostat, together with the switch mechanism shown, being provided for the purpose of intermittently or permanently breaking the electric circuit through the heating elements when predetermined temperatures are reached within the cooker, as will hereinafter be described.

By referring to Fig. 1, it will be seen that the thermostat is mounted within a chamber 20 and that this chamber is insulated from the radiating heat of the elements 3 and 4 by means of a lower air chamber 5' and an annular heat-insulating ring 6. The thermostat thus insulated is, practically speaking, only affected by the temperature obtained within the receptacle. The thermostat B is, in this instance, constructed on the thermopile principle and may consist of one or more disks 7 of the character here shown. The disk shown is secured to a raised portion 8, formed in the bottom of the receptacle, and attached to said disk is a downwardly projecting rod 9 which is provided for the purpose of actuating a lever 10, pivotally mounted, as at 11, in a standard 12, secured in the bottom of the base section.

The lever proper is normally held in the position shown in Fig. 1 by means of a spring 13, and its position is changed only when the thermostat expands and the rod 9 engages with an adjusting screw 14 secured in the end of the lever.

Mounted beyond the outer end of the arm 10 is a standard 15, upon which is turnably mounted a sleeve 16. Mounted on one end of the sleeve is an upper disk 17, provided with a plurality of downwardly projecting cam members 18, and secured near the lower end of the sleeve is a similar disk 19 provided with a plurality of upwardly projecting cam members 20. The diameter of the disks 17 and 19 and the position of the cams 18 and 20 are such that engagement will be made with the outer end of the arm 10, as will hereinafter be described.

Journalled at one end in the standard 15 and at the opposite end in the side of the base 2, is a horizontally disposed shaft 21, on the outer end of which is secured a lever 22 mov-

able with relation to a dial 23 and a stop lug 24. Secured on the inner end of the shaft is a bevel gear 25, and intermeshing with said gear is a horizontally positioned bevel gear 26, which is secured to the sleeve 16 to turn in unison with the cam disks 17 and 19. Surrounding the shaft 21 is a coil spring 27. One end of this spring is secured to the gear 25, while the opposite end is secured to the side of the base 2. This spring is secured in the manner shown so as to permit it to be wound when lever 22 is turned downwardly into engagement with the stop plug 32.

Secured on the lower side of the cam disk 19 is a switch member 28, which is provided with a plurality of outwardly projecting blades 29. This switch member is insulated from the cam disk 19, the sleeve 16 and the standard 15 upon which it is turnably mounted and is provided for the purpose of establishing a circuit between the knife switch, indicated at 30, and a switch member 31. One terminal of the main heating element, indicated at 3, is connected with a switch plug of suitable construction, shown at 32, by means of a wire 33, while the other terminal of the heating element is connected with a switch member 31, through a wire 34, and then by means of a wire 35 which is connected at one end to the knife switch 30 and at the opposite end to the plug 32; the switch member interposed between the wires 34 and 35 being provided for the purpose of making or breaking the circuit through the element, as will hereinafter be described.

In operation, with the receptacle A filled, it is only necessary to turn the lever 22 anticlockwise until it engages with the stop lug 24. This causes the shaft 21 to turn and simultaneously the gears 25 and 26, with connected sleeve 16 and attached cam disks 17 and 19, together with the switch member 28. A complete turn of the lever 22 into engagement with the lug will bring the switch member 28 to a position where one of the projecting blades 29 will engage the knife switch 30, thus closing a circuit through the main heating element 3 and the plug 32.

The switch mechanism will now remain stationary and the current will continue flowing through the element 3 until the temperature of the contents within the receptacle A has reached the boiling point, or any temperature desired. The thermostat B insulated from the heating element, as previously described, gradually expands as the temperature in the receptacle rises but will not trip the lever 10 until the desired temperature is reached within the receptacle A as it is actuated entirely by this temperature. Expansion of the thermopile 7 will cause the rod 9 to move in a downward direction

and engage the set-screw 14, causing this end of the lever to become depressed and the opposite end of the lever to rise with relation to a contacting cam member 20 formed on the lower disk 19. The lever will continue rising until it moves out of engagement with this cam member and will, therefore, release both the upper and the lower disks which will now turn about the standard 15, due to the tension of the spring 27, until the succeeding cam member 18, on the upper disk, engages the outer end of the lever.

The blade projection 29, previously in engagement with the knife switch 30, is thus released and the circuit through the element is broken. The contents of the receptacle A will thus have a tendency to cool to a certain extent, thus permitting the thermopile to contract and the rod 9 to move out of engagement with the set-screw 14. The spring 13 engaging with the lever 10 has, however, sufficient tension to depress the outer end of the lever 10, thus maintaining an engagement between the set-screw 14 and the rod 9 and similarly moving the arm out of engagement with the lug 18. The cooperating disks 17 and 19 are thus again released and will turn about the standard 15 until the second cam member 20 is engaged.

In the present instance it will be seen that each disk 17 and 19 is provided with four cam members and also that the switch member 28 is provided with four projecting blades 29. These blades are mounted in alinement with the cam members 20 formed on the lower disk. It can, therefore, be seen that the circuit through the element will be closed when the lever 10 is moved into engagement with the lower cam members and that the circuit is broken when the lever is moved to engage with the upper cam members. The circuit through the heating element 3 is thus opened and closed three times after the contents of the receptacle is first brought to a boiling point and that the cam disk provided merely acts as an escapement to control the position of the switch member 28 and that the thermostat B, controlled by the temperature within the receptacle, actuates and times the movement of the escapement.

If it is desired to prevent the temperature within the receptacle from dropping too rapidly, or, in other words, prevent the contents from cooling after same has once been brought to boiling point, it is possible to employ the auxiliary heating element indicated at 4. The circuit through this element is established by providing the contact member indicated at 40. This member is carried by the lower cam disk 19, but is insulated therefrom. One end of the blade 40 is adapted to engage with a wipe contact 41, while the other end engages with the knife

switch 30. One of the terminal wires of the element 4 is, therefore, connected with the plug 32 through a wire 42, while the other terminal is connected through another wire 43 with the wipe contact 41, which in turn establishes a circuit through the wire 35 and plug 32, when the blade 40 moves into position, as shown in Fig. 1; this position being assumed when the cam disks have returned to normal position, or, in other words, when the lever 22 has returned to zero position as far as the indicator is concerned. Any desired temperature, as far as the contents of the receptacle is concerned, may thus be maintained indefinitely or until the circuit is finally broken by removing the plug 32.

By referring to Figs. 1 and 2, it will be seen that a trip lever 45 has been provided. One end of this lever extends through the base while the other end engages with the lower side of the arm 10. This trip lever is provided for the purpose of raising and lowering the arm 10, or, in other words, to operate the escapement if it is desired to return it to raised position without relying upon the normal action of the thermopile 7.

By referring to Fig. 3, which, in principle, is the same as the mechanism just described, it will be seen that the circuit through the heating element is permanently broken when the boiling point or any predetermined point is reached within the receptacle. The switch mechanism actuated by the thermostat consists of an arm 50 pivotally mounted in the standard 51. This arm is actuated by the thermostat in a manner similar to the arm 10 described in connection with Figs. 1 and 2. The outer end of the arm 50 is in this instance provided with a hook-shaped extension which is adapted to engage with a similarly shaped extension formed on the sliding bar 52 carried by the standards 53. The sliding bar is normally held out of engagement with the arm 50 by the tension of a spring 54, thus maintaining the members of the knife switch, indicated at 55, out of engagement and breaking the circuit through the heating element.

In connection with the switch arrangement here shown it will be seen that the thermostat is inclosed by a chamber or box 56 which projects a considerable distance up within the receptacle. This is of importance as it positively prevents the thermostat from being actuated by the heat of the elements.

The illustration shown in Fig. 4 is practically the same as the device shown in Figs. 1 and 2, with the exception that the cooking receptacle is entirely removed. The heat insulating ring 6 is, furthermore, carried through the base, thus forming a cavity 60 for the reception of the thermostat and forming a positive insulation between the heating elements and the thermostat. Any

article, such as an iron, cooking receptacle, etc., may be placed upon the annular ring plate, indicated at 61, and the final temperature to which the object is heated is radiated through the said object to affect the thermostat B.

The device shown in Fig. 4 may, in actual practice, prove the most desirable construction as it permits of a more general use than the device shown in Fig. 1 which is practically limited to the boiling of coffee or other liquid foods; while the device shown in Fig. 4 may be used for practically any purpose where heat is required. The particular form of thermostat employed in either device does not form any part of the invention as it is obvious that any suitable form may be employed which is sufficiently sensitive to be actuated by the heat obtained within the receptacle.

The device as a whole is simple and substantial in construction, may be used for general heating or cooking purposes, and is so constructed that the circuit through the heating element may either be permanently broken when a predetermined temperature is secured or may be intermittently broken any desired number of times after a predetermined temperature has first been reached. This can easily be understood by referring to either Figs. 1 or 4, as it is possible to employ any number of projecting cam members, thus making it possible to make or break the circuit as many times as desired.

The materials and finish of the several parts of the device are such as the experience and judgment of the manufacturer may dictate.

I wish it understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims, and that I do not wish to limit myself to the specific design and construction here shown.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In a cooker, a receptacle, means for heating the contents of the receptacle until a predetermined temperature is obtained, and means actuated by said temperature for turning off and on the heat a predetermined number of times.

2. In a cooker, a receptacle, means for heating the contents of the receptacle until a predetermined temperature is obtained, and means for intermittently turning off and on the heat a predetermined number of times after a predetermined temperature is obtained within the receptacle.

3. In a cooker, a receptacle, an electric heating element adapted to heat the receptacle, a switch adapted to intermittently open and close a circuit through the heating element, and a thermostat actuated by

the temperature within the receptacle adapted to intermittently operate the switch to open and close the circuit through the heating element a predetermined number of times.

4. The combination with an electrically heated fluid receptacle, of a thermostatic means to actuate an intermittent circuit control mechanism when the boiling temperature has been reached by the contents of the receptacle and before appreciable evaporation has occurred, said thermostatic means being actuated by the temperature of the contents of the receptacle and independent of the temperature of the heating element.

5. In a cooker, a receptacle, an electric heating element adapted to heat the receptacle, a revolving switch member adapted to intermittently close and open a circuit through the heating element, and a thermostat adapted to control the revolving movement of the switch.

6. In a cooker, a receptacle, an electric heating element adapted to heat the receptacle, a revolving switch member adapted to intermittently close and open a circuit through the heating element, an escapement mechanism connected with the switch to cause a step by step rotation of the switch, and a thermostat controlling the movement of the escapement.

7. In a cooker, a receptacle, an electric heating element adapted to heat the receptacle, a revolving switch member adapted to intermittently close and open a circuit through the heating element, an escapement mechanism connected with the switch to

cause a step by step rotation of the switch, and a thermostat actuated by the temperature obtained within the receptacle controlling the movement of the escapement.

8. In a cooker, an electric heater comprising an insulating ring, and a heating element mounted within said ring, a cooking receptacle mounted above said ring and adapted to be heated by said heating element, said insulating ring being provided with an air chamber, a thermostat mounted above said air chamber and insulated thereby from the heat of said heating element, and a switch controlled by said thermostat under the influence of the heat in said receptacle.

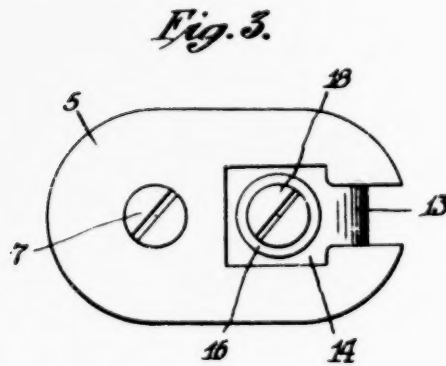
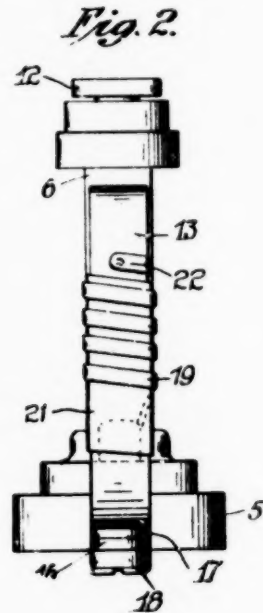
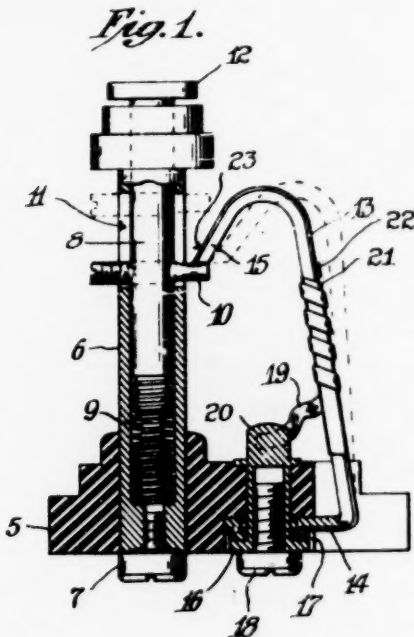
9. In a cooker, an electric heater comprising a main heating element and an auxiliary heating element, a switch adapted to close a circuit through said heating elements, thermostatic means controlled by the heat generated by said heating elements for permitting the operation of said switch to make and break the circuit of said main heating element a predetermined number of times, and means carried by said switch for closing a circuit through the auxiliary heating element when the circuit through the main heating element has been broken a predetermined number of times.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN F. NEWSOM.

Witnesses:

W. W. HEALEY,
THOS. CASTBERG.



WITNESS
E. J. Mitchell

INVENTOR
C. E. Stahl
W. J. Mitchell
ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES E. STAHL, OF MERIDEN, CONNECTICUT, ASSIGNOR TO THE CONNECTICUT TELEPHONE & ELECTRIC COMPANY, INCORPORATED, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC SWITCH.

1,372,207.

Specification of Letters Patent.

Patented Mar. 22, 1921.

Application filed September 6, 1919. Serial No. 322,107.

To all whom it may concern:

Be it known that I, CHARLES E. STAHL, a citizen of the United States of America, residing at Meriden, Connecticut, have invented a new and useful Electric Switch, of which the following is a specification.

My invention relates particularly to thermostatic switches.

The main object is to provide a simple but reliable mechanism which is compact and durable, sensitive yet positive in its automatic release and adapted to be readily reset.

In its preferred form the thermostatic member has a hook-like end whereby the movement of the contact end with relation to the other contact is very slight during the ordinary operation of the system in which the switch is installed, but in which the effective movement of the contact end is more abrupt at higher temperatures. The other contact member in the preferred form consists of an adjustable pin carried by a spring pressed plunger which is adapted to be manually reset after automatic release. The relative movement of the contact pin and the thermostatic element is such that in breaking the circuit any arc which may be formed is drawn across surfaces other than the surfaces which are in contact during current-carrying conditions. Furthermore, the resetting of the device cleans off the surfaces over which the arc is drawn.

Figure 1 is a side view and partial section of a device embodying my invention, showing the parts in full lines in their current-carrying or closed-circuit relation and indicating in dotted lines the position of the contact members when the circuit is opened.

Fig. 2 is an edge view of the same.

Fig. 3 is a bottom plan view.

In this particular form the base 5 is of insulating material in which is molded the tubular post 6 with which one of the circuit wires may be connected by a binding screw 7. In this post is mounted a plunger 8 which is pressed upward by a spring 9. From this plunger extends a contact pin 10 which is preferably adjustable through the plunger. This pin is adapted to travel in the slot 11 of the post 6. The plunger

is preferably provided with a button 12 at its outer end for pushing the plunger in.

The thermostatic element 13 may be formed of suitable material adapted to be bent or warped by heat. The lower end of this is bent to form a foot 14 which is seated in a recess in the base 5 and the outer end is bent into a hook-like form at 15 to engage the contact pin 10. The foot may be secured in position by a stud 16 which however is insulated from it by a washer 17. A binding screw 18 co-acts with the stud 16 at one end and a resistance strip or wire 19 is electrically connected to the other end 20. This strip 19 is wound around the main arm of the thermostatic member, being insulated therefrom by a layer of insulating material 21 throughout most of its length and electrically connected at 22.

In the position shown in full lines in the drawing the circuit extends from the binding screw 7 through the tubular post 6, plunger 8, contact pin 10, contact tip 15, the upper end of the arm 13, coiled strip 19 and the stud 16 to the binding screw 18.

As current flows through the switch, the coil 19 heats up the thermostatic arm 13 and causes its upper end to move away from the post 6. At the same time the contact tip 15 moves toward the post although to a somewhat less extent due to the fact that the tip is shorter and the heat is more concentrated in that part of the arm which is surrounded by the coil 19. The parts are so proportioned that at the higher temperatures the radiation from the contact tip 15 is so rapid that the end moves but little relatively to the main body of the thermostatic element (the radiation of course being more rapid at higher temperatures). At the higher temperatures therefore, the movement of the contact tip 15 toward the right is substantially identical with the movement of the main arm 13 and consequently the contact tip is moved quickly away from the contact pin 10 at the time when it is desired that the circuit shall open automatically.

In the circuit-opening movement any arc which is formed will be drawn across the outer end of the contact pin 10 and along the inclined face 23 of the tip of the thermostatic element. The resetting of the switch

when the upper end of the thermostatic element moves back toward the post will cause the outer end of the contact pin 10 to slide down the incline 23, thus scraping 5 the contact element where the arc was formed and keeping the surface bright.

By screwing the pin in or out of the plunger the switch may be adjusted to open at different temperatures.

10 I claim:—

1. In an electric switch, an insulating base, a tubular post carried thereby, a spring pressed plunger operable in said post, a pin projecting from said plunger, a ther- 15 mostatic element having a main arm mounted alongside of said post and having its tip end engaging the outer face of said pin.

2. In an electric switch, a longitudinally movable member having a transversely extending contact pin, a thermostatic element 20 mounted alongside of said member and having its tip end engaging the outer surface of said pin, the outer wall of said thermostatic element being inclined relative 25 to the direction of movement of said pin.

3. In an electric switch, an insulating base, a tubular post carried thereby, a plunger movable in said post, an adjustable contact member carried by said plunger and a 30 thermostatic arm secured to said base and having a reversely extending end engaging said contact member.

4. In an electric switch, an insulating base, a tubular post carried thereby, a spring 35 pressed plunger reciprocable in said post, a transversely adjustable contact member carried by said post, said plunger being adapted to be set by hand, a thermostatic element secured to said base and having a reversely 40 extending contact tip engaging the outer face of said adjustable contact member, and a resistance coil for heating a part of said thermostatic element.

5. In an electric switch, a spring pressed 45 reciprocable contact, a thermostatic arm arranged adjacent thereto and having a reversely extending contact tip normally engaging said contact, and means for heating a part of said thermostatic element where- 50 by a differential action of the contact tip with respect to the remainder of the ther-

mostatic arm is effected at certain temperatures and the contact tip moves at substantially the same rate as the remainder of the thermostatic arm at higher temperatures. 55

6. In an electric switch, a spring pressed contact member, a thermostatic arm having its free end extending in the opposite direction to the main portion thereof and adapted to engage said contact member to conduct 60 current therethrough under normal conditions, and means for heating the main portion of said arm so as to move it away from said contact and at the same time move its end toward said contact to avoid breaking 65 the circuit over a certain range of temperatures, the proportions of the parts of said arm and its end being such that its end moves with the main part at temperatures above a predetermined value. 70

7. In an electric switch, a spring pressed member having a shoulder, a thermostatic arm having its free end extending in the opposite direction to the main portion of said arm and normally engaging said shoulder, 75 and a coil surrounding only a portion of said arm whereby the thermostatic movement of the free end of said arm over a certain range of temperatures is in a direction opposite to the movement of the main portion of said 80 arm, so as, during said range, to retain engagement with said shoulder, and whereby radiation from the end of said arm at higher temperatures causes a differential movement between the main portion and the end of 85 said arm so as to cause the end of said arm to be disengaged from said shoulder.

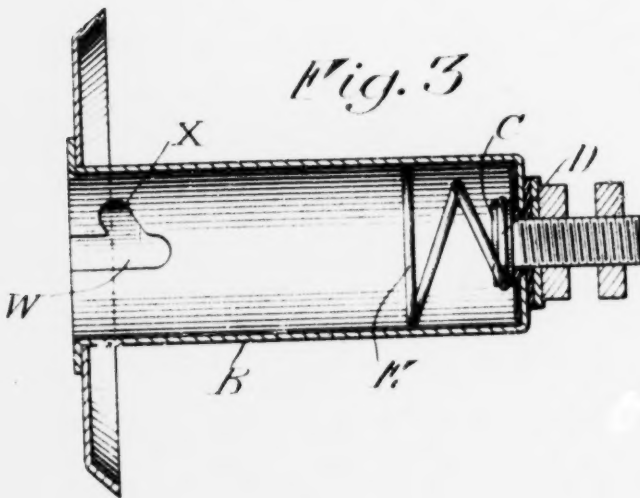
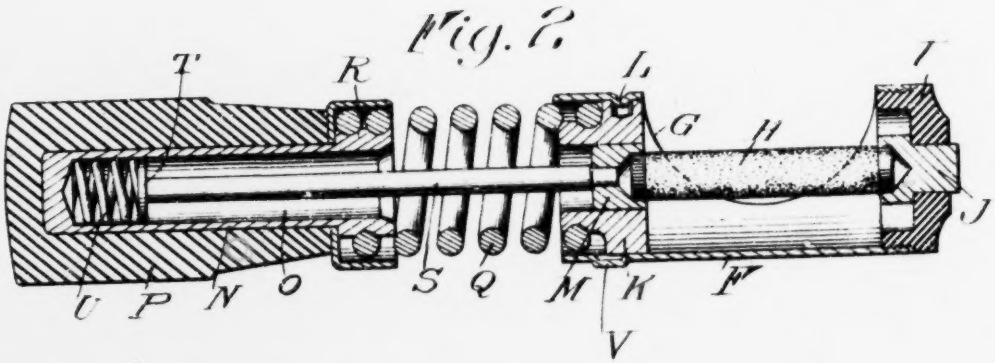
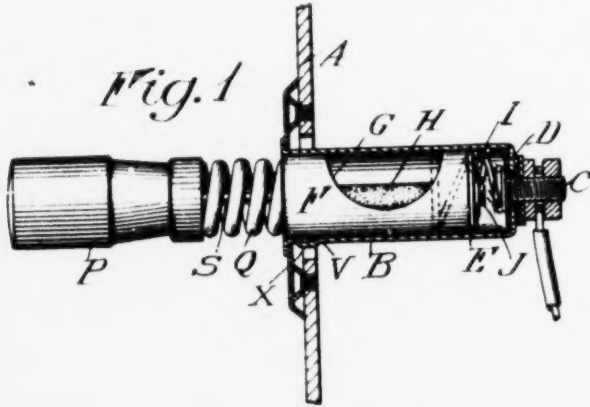
8. In an electric switch, a spring pressed member having a shoulder, means for manually moving said member and shoulder 90 against the pressure of said spring, a thermostatic arm arranged alongside of said spring pressed member and having its free end extending in the opposite direction to the main portion of said arm and adapted to 95 engage said shoulder, and a heating coil surrounding a portion of the main arm only, whereby there is permitted a differential thermostatic action between the main portion of said arm and the end thereof.

CHARLES E. STAHL.

F. A. ADAMS.
CIGAR LIGHTING DEVICE.
APPLICATION FILED AUG. 20, 1919.

Patented Apr. 5, 1921.

1,373,583.



INVENTOR
Frank A. Adams
BY
Harold E. Stonebraker
his ATTORNEY

UNITED STATES PATENT OFFICE.

FRANK A. ADAMS, OF ROCHESTER, NEW YORK, ASSIGNOR TO SHUR PRODUCTS, INC.,
OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

CIGAR-LIGHTING DEVICE

1.373,583.

Specification of Letters Patent.

Patented Apr. 5, 1921.

Application filed August 30, 1919. Serial No. 318,800.

To all whom it may concern:

Be it known that I, FRANK A. ADAMS, a citizen of the United States of America, residing in Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Cigar-Lighting Devices, of which the following is a specification.

My invention relates to electrically heated devices, more particularly of the type including a heating unit that is insertible into and removable from a socket, the unit being inserted to close an electric circuit and to heat it to the required degree, after which it can be removed and used. An instance of one practical application of the invention is an electric cigar lighter, adapted for use on automobiles, and one of the purposes of the improvement is to improve such structures so that the device can be handled without danger of burning the user.

More particularly, the object of the invention is to afford heat insulating or heat dissipating means between the electrical heating unit and the handle by which it is held, so as to prevent the handle from becoming excessively heated. A further purpose is to accomplish this without making a bulky or clumsy device, as it is important for such purposes as automobile cigar lighters that the contrivance be compact and easy to handle, and that it requires little space when not in use.

Another object of the invention is to improve the construction of the heating unit, so as to bring about quick and uniform heating with the least amount of electrical energy.

Still an additional object of the invention is to construct a socket, into which the heating unit is inserted, in such a way as to render the closing of the circuit and withdrawal of the heating unit, a simple and at the same time certain operation.

The invention also accomplishes other purposes as will appear from the following detailed description and the accompanying drawing, in which:

Figure 1 is a side elevation, partly in section, showing the heating unit in its normal position in the socket, with the circuit open:

Fig. 2 is an enlarged sectional view of the heating unit and handle portion, and

Fig. 3 is an enlarged sectional view of the socket.

The structure herein disclosed is intended merely as illustrative of the invention, and not as confining it within the limits of the details of the drawings, and while I will describe what I have found to be a preferred embodiment, there are other means which can be designed to accomplish the same ends.

Referring more particularly to the drawings, A designates the instrument board of an automobile or vehicle, provided with the socket B which has an electrical terminal C at its inner end. The terminal C is in the form of a screw, having a head with an insulating bushing, the latter provided with a peripheral groove, which receives the small end D of a conical spring, the larger end E of which is freely movable within the socket B to engage the heating unit. The large end E of the spring is preferably slightly less in size than the inner diameter of the socket, so that the wall of the socket forms a guide for the spring and prevents it from moving unevenly or becoming improperly positioned.

The heating unit comprising a cylindrical housing F, which is cutaway at G to afford access to a carbon element H. The housing F has a head I at one end formed of any suitable insulating material, and with a central opening in which is secured a metallic contact J which engages the terminal C when inserted within the socket B. The other end of the housing F is provided interiorly with a metallic collar K, the housing being attached thereto by a projection L stamped inwardly to engage a recess in the collar. The collar K has a central opening and receives a metal contact member M which engages the adjacent end of the carbon element H. The ends of the carbon element H are tapered or conical, and engage correspondingly shaped recesses in the contact blocks J and M. Each end of the carbon element is coated with a layer of conducting material such as copper which is substantially co-extensive with the surface that is engaged by the contact. The copper coating is preferably obtained by dipping the carbon element in a copper solution, and serves to bring about an intimate electrical contact, causing the current to travel toward the center of the carbon quickly and uniformly and thus heating the carbon in a minimum time.

The handle portion comprises a hollow

cylindrical member N, affording a chamber O and surrounding the cylinder N is a handle proper, designated by P, and consisting of any suitable material such as what is commercially known as "bakelite." Arranged between the handle and heating unit is a heat insulating or heat dissipating means, and to accomplish this, I preferably attach the handle portion to the heating unit by connecting means that prevents the handle engaging portion P from becoming excessively heated. This is accomplished in my preferred arrangement, by a metallic coil Q, one end of which is attached to the collar K by engaging a threaded portion thereon, and the other end of which engages a threaded portion on an enlargement R of the cylinder N. This arrangement affords a substantial air space between the handle and heating unit for cooling the handle.

The contact M is preferably in yieldable engagement with the carbon element, and this is accomplished by attaching to the contact M a rod S which extends into the chamber O. At its opposite end, the rod S is provided with a head T, which is engaged by a spring U arranged within the chamber, and acting to maintain the contact in engagement with the carbon element.

The housing F is provided with a boss or enlargement V cooperating with a slot in the socket F. Said slot includes a longitudinal portion W and a transverse portion X, which extends laterally from the longitudinal portion W and is inclined toward the outer end of the socket. The purpose of the inclined lateral slot or cutaway portion is to lock the heating unit in the socket when not in use, and the inclined inner wall of the cutaway portion X permits of closing the circuit to the heating unit by merely pushing in on the handle. Such inward pressure forces the boss V against the inclined wall of the slot X and thereby rotates the heating unit until the boss V is in line with the longitudinal portion, and further pressure moves it longitudinally and closes the circuit. It will be understood that the spring E holds the boss V against the end of the slot X when not in use, and to operate the device, the heating unit is forced inwardly against the action of spring E until contact J engages the terminal C for a sufficient length of time to heat the carbon element H. The heating unit is then withdrawn to light a cigar or cigarette, which is inserted through the cutaway portion G to engage the heated carbon. The electrical circuit is completed by grounding through the collar K, housing F, and instrument board A.

While I have described a particular form of the invention, it is to be understood that it is susceptible of modifications, without departing from the fundamental concept of

the improvement, as set forth in the following claims.

I claim:

1. The combination with an electrical heating unit, of a handle portion independent of the heating unit, and a coil separate and independent from the handle portion and connecting the handle portion and said unit.

2. The combination with an electrical heating unit, of a handle portion independent of the heating unit, and a metallic coil having one end attached to said unit and its opposite end attached to the handle portion, said coil being separate and independent from the handle portion.

3. The combination with an electrical heating unit, comprising a carbon element, of a handle portion having a chamber therein, a metallic coil connecting said heating unit and handle portions, a movable contact engaging one end of the carbon element, a rod passing through said coil with one end engaging said movable contact and the opposite end entering said chamber in the handle portion, and means within the chamber actuating said rod and movable contact toward the carbon element.

4. The combination with an electrical heating unit comprising a carbon element, of a handle portion having a chamber therein, heat non-conducting connecting means between the handle portion and said unit, a movable contact engaging one end of the carbon element, a rod with one end secured to said movable contact and having its opposite end within said chamber, and means within the chamber actuating said rod and movable contact toward the carbon element.

5. The combination with an electrical heating unit, of a socket therefor, and a conical spring having its smaller end secured to the base of the socket and its larger end movable within the socket to engage said unit.

6. The combination with an electrical heating unit having a boss at one side thereof, of a socket having a cutaway portion to receive said boss, said cutaway portion embodying an opening extending longitudinally of the socket, and a transverse locking opening extending laterally from the longitudinal opening and inclined toward the open end of the socket.

7. The combination with an electrical heating unit, of a handle portion arranged in close proximity to the heating unit and independently thereof, and connecting means between the handle portion and heating unit, said connecting means serving to support the handle portion and to prevent it from becoming excessively heated through proximity to the heating unit.

8. The combination with an electrical

heating unit, of a handle portion arranged
in close proximity to the heating unit and
independent thereof, and a connection be-
tween the heating unit and the handle por-
5 tion, said connection serving to support the
handle portion and being of such form as to
cause heat passing from the heating unit to
the handle portion to travel over a relatively
long path whereby such heat is substantially
10 dissipated before reaching the handle por-
tion.

9. The combination with an electric heat-
ing unit, of a handle portion arranged in

close proximity to the heating unit and in-
dependent thereof, and a metallic coil hav- 15
ing one end attached to said unit and its op-
posite end attached to the handle portion,
said coil being separate and independent
from the handle portion and serving to pre-
vent the latter from becoming excessively 20
heated through proximity to the heating
unit.

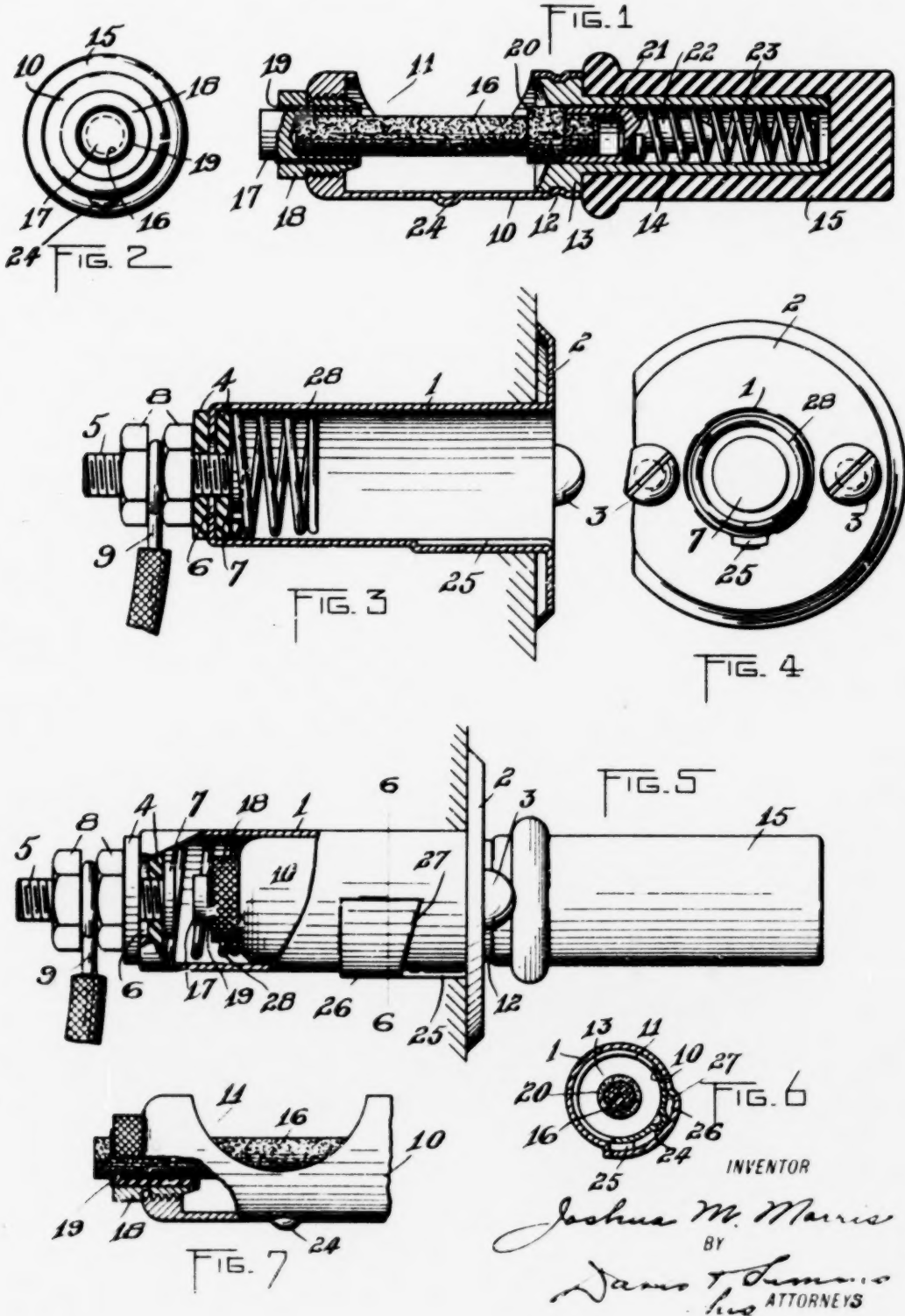
In witness whereof, I have hereunto signed
my name.

FRANK A. ADAMS.

J. M. MORRIS.
ELECTRICAL LIGHTING DEVICE FOR CIGARS AND THE LIKE.
APPLICATION FILED OCT. 2, 1919.

1,376,154.

Patented Apr. 26, 1921.



UNITED STATES PATENT OFFICE.

JOSHUA M. MORRIS, OF ROCHESTER, NEW YORK.

ELECTRICAL LIGHTING DEVICE FOR CIGARS AND THE LIKE.

1,376,154.

Specification of Letters Patent.

Patented Apr. 26, 1921.

Application filed October 2, 1919. Serial No. 328,041.

To all whom it may concern:

Be it known that I, JOSHUA M. MORRIS, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Electrical Lighting Devices for Cigars and the like, of which the following is a specification.

The present invention relates to an electrical lighting device of the type in which an incandescent element is employed for lighting cigars, tobacco or the like, an object of this invention being to provide a device in which the incandescing element is mounted upon a part which is removably connected to a stationary part through which the electricity is supplied to the incandescing element, thus permitting the latter to be connected to or disconnected from the electrical current.

To this and other ends, the invention consists of certain parts and combinations of parts, all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the drawings:

Figure 1 is a longitudinal section through the removable member of the device;

Fig. 2 is an end view of the removable member;

Fig. 3 is a longitudinal section through the stationary or socket member of the device;

Fig. 4 is a fragmentary view of one end of the socket member;

Fig. 5 is a view in side elevation and partially in section showing the two members of the device connected;

Fig. 6 is a section on the line 6—6, Fig. 5; and

Fig. 7 shows a fragmentary view partially in section in which the incandescing element is extended through one end of the removable member in order that the device may be used for lighting a pipe.

In the illustrated embodiment of the invention there is employed a stationary member which may be attached to any suitable support such for instance as the dash board of an automobile and removably connected to this stationary part or member is a member by which the incandescing body is carried, said removable member being adapted for connection with the stationary member for the purpose of heating the incandescing

element or body to incandescence after which the removable part is disconnected from the stationary part and is employed for lighting a cigar.

The stationary part in this instance is in the form of a socket member 1 adapted to be fitted in an opening in the dash board of an automobile and having its open end in this instance formed with a flange 2 secured by screws 3 to the dash board. The dash board of an automobile is ordinarily grounded and as a consequence the socket 1 which is metallic and forms one of the terminals of the stationary part is likewise grounded. The other terminal of the stationary part is in this instance formed by a head 7 of a screw 5 which extends through an opening 6 in the inner end of the socket member 1. Two insulating washers 4, one on the inside of the socket member and the other on the outside, insulate the terminal 7 from the socket 1. Nuts 8 on the screw 5 hold the terminal 7 to the socket member and in addition serve for securing the conductor wire 9 which preferably leads from the battery.

The removable member of the lighter comprises in this instance a hollow plug 10, one side wall of which is formed with a lateral opening 11. This hollow plug is spun at its inner end about an enlargement 13 on a sleeve or tube 14 which fits within an insulating cap 15 serving as the handle for the hollow plug, the insulating cap abutting the enlargement 13 of the sleeve 14. Within the hollow plug 10 an incandescing element 16 is arranged preferably in the form of a high resistance carbon. In this instance, one end of this carbon rod projects into a socket in a terminal piece which is arranged within a bushing 18 that is secured in the end of the plug, an insulating sleeve 19 being arranged between the bushing 18 and the terminal 17. The other end of this carbon or incandescing rod abuts a plug 20 of low resistance carbon fitted in a socket 21 that is formed in the plunger 22 which operates within the sleeve 14, a spring 23 also being arranged in the sleeve and acting on the plunger 22 to hold the low resistance carbon 20 against the high resistance carbon or incandescing element 16. Instead of employing the terminal 17, the incandescing member 16 may be extended through the insulating sleeve 19 to

project from the end of the bushing as shown in Fig. 7, this construction being designed for lighting pipes.

It is preferred to provide some means normally for holding the incandescing element 16 out of electrical connection with the terminal 7 and to this end a helical spring 28 may be arranged within the socket member 1 to cooperate with the removable plug 10 about the bushing 18 in the manner shown in Fig. 5, thus holding the terminal 17 out of electrical connection with the terminal 7. If the plug or removable member be pushed inwardly against the spring 28, the terminals 7 and 17 will be brought into engagement and, in this way, the current will flow through the incandescing element 16, thus heating the latter to the point of incandescence after which the removable member is withdrawn from the socket member and a cigar may be lighted by introducing it into engagement with the incandescing member 16 through the opening 11 in the side of the plug or tubular terminal 10. Of course, with a pipe, the construction shown in Fig. 7 is used in which instance the end of the incandescing element 16 is introduced into the pipe.

It is desirable to interlock the removable plug with the socket member and to this end the plug is provided on one side with a projection 24 which is pressed up from the metal of the tubular terminal 10 and is adapted to be passed into a longitudinally formed groove 25 in the inner face of the socket member, this groove 25 communicating with a laterally extending groove 26 in the socket member, the wall 27 of said groove 26 nearest the open end of the socket being inclined so that as the projection 24 enters the laterally extending groove, it will, under the action of the spring 28, be held against the inclined wall 27 at the outer end of the lateral groove 26, the friction between the projection 24 and the inclined wall 27 being sufficient to prevent the removable plug being accidentally disconnected from the stationary socket member. yet at the same time the lateral groove 26 is of sufficient width to permit the plug to be moved inwardly in order that its terminal 17 may be brought into contact with the terminal 7 at the inner end of the socket member.

From the foregoing it will be seen that there has been provided a lighting device which may be attached to any suitable support such for instance as the dash of an automobile. This lighting device has a stationary member preferably in the form of a socket, and a removable member, preferably in the form of a plug. The front face of the socket member is preferably substantially flush with the front face of the dash and the removable member or plug

carries an insulating handle and an incandescing element, the latter being adapted to be brought to incandescence when the plug is fitted in the socket in a certain position. Normally the plug, while positioned in the socket, has its incandescing element out of electrical connection. This element may be readily brought to incandescence by the movement of the plug axially against the action of the spring. This spring also serves for holding the plug interlocked with the socket member so that the vibration of the vehicle will not disconnect the plug from the socket member.

What I claim as my invention and desire to secure by Letters Patent is:

1. A lighting device comprising two members, one of which is stationary and is provided with two terminals and the other of which is provided with two terminals and an exposed incandescing device connecting said terminals, the two terminals of the first mentioned member being adapted to be engaged by the two terminals of the second mentioned member in order to conduct the current through the incandescing device, the second mentioned member being removable from the first mentioned member and having a position on the first mentioned member in which its two contacts will lie out of engagement with the two contacts of the first mentioned member, and a spring for holding said second mentioned member with its two contacts out of engagement with the two contacts of the first mentioned member, said spring being yieldable to permit the second mentioned member to be moved on the first mentioned member in order that the two contacts of the second mentioned member may be brought into engagement with the two contacts of the first mentioned member in order to bring the incandescing device to incandescence.

2. A lighting device comprising a socket member forming a terminal and having also another terminal, a member insertible in said socket member and having an exposed incandescing body adapted to be brought to incandescence when connected with the two terminals, said member having a position on the socket member in which the circuit through the incandescing body is broken, and a spring for holding said member on the socket out of electrical connection with one of the terminals of the socket so that the circuit is broken.

3. A lighting device comprising a stationary socket forming one terminal, a terminal arranged within said socket, a hollow terminal of conducting material having an opening in its side wall and adapted to be introduced in the socket, and an incandescing body arranged in said hollow terminal.

4. A lighting device comprising a stationary socket forming a terminal, a terminal ar-

ranged in the socket, a hollow terminal having an opening in its side wall and adapted to be introduced into said stationary socket, a terminal secured in the end of the hollow terminal to cooperate with the terminal in the socket, an incandescing body within the hollow terminal, and spring means acting on said incandescing body to hold it to the terminal at the end of the hollow terminal.

5. A lighting device comprising a stationary socket forming one terminal, a terminal arranged within the socket, a hollow terminal having an opening in its side wall and adapted to be introduced into the stationary socket, an insulator arranged in the end of the hollow terminal, a terminal arranged in said insulator, an incandescing body having its end positioned in said insulator against the last named terminal, and a spring pressed plunger acting on said incandescing body to hold it to the insulator.

6. A lighting device comprising a stationary socket forming a terminal, a terminal arranged within the socket, a hollow terminal having an opening in its side wall and adapted to be introduced into the stationary socket, a sleeve insulator arranged in the end of the hollow terminal, a terminal secured in said sleeve insulator to contact with the terminal in the socket, an incandescing body having one end extending into said sleeve insulator and its other end connected with the hollow terminal.

7. A lighting device comprising a stationary socket forming a terminal, a terminal arranged in said socket, a spring arranged in the socket, a removable hollow terminal adapted to fit in the socket, and an incandescing body carried by said removable hollow terminal and adapted to be brought into electrical connection with the terminal in the stationary socket when the hollow terminal is moved to compress the spring.

8. A lighting device comprising a stationary socket forming one terminal, a terminal arranged within the socket, a spring arranged within the socket, a hollow terminal having an opening in its side wall and adapted to be introduced in said stationary

socket, a terminal insulated from the hollow terminal and arranged at the end of said terminal to contact with the terminal in the socket, and an incandescing element arranged in the hollow terminal to be exposed through the opening and electrically connected to the hollow terminal and the terminal in the end of the hollow terminal.

9. A lighting device comprising a stationary socket forming one terminal, a terminal arranged within the socket, a hollow terminal having an opening in its side wall and adapted to be introduced into said stationary socket, an insulator in the end of the hollow terminal, a terminal arranged in said insulator, an incandescing body projecting into said terminal, and a spring pressed plunger acting upon said incandescing body.

10. A lighting device comprising a stationary socket forming a terminal, a terminal arranged in said socket, a spring in the socket, a removable hollow terminal adapted to fit in the socket, an incandescing body carried by said removable hollow terminal and adapted to be brought into electrical connection with the terminal in the stationary socket when the hollow terminal is moved to compress the spring, and interlocking connections between the stationary socket and the removable hollow terminal controlled by said spring.

11. A lighting device comprising a stationary socket forming one terminal and having its inner wall provided with a longitudinally extending groove and a laterally extending groove leading from said longitudinally extending groove, a terminal arranged in said socket, a removable hollow terminal adapted to fit in the socket and provided with a projection adapted to operate in the longitudinally extending and laterally extending grooves, and an incandescing body carried by said removable hollow terminal and adapted to be brought into electrical connection with the terminal in the socket when the hollow terminal is moved longitudinally in the socket.

JOSHUA M. MORRIS.

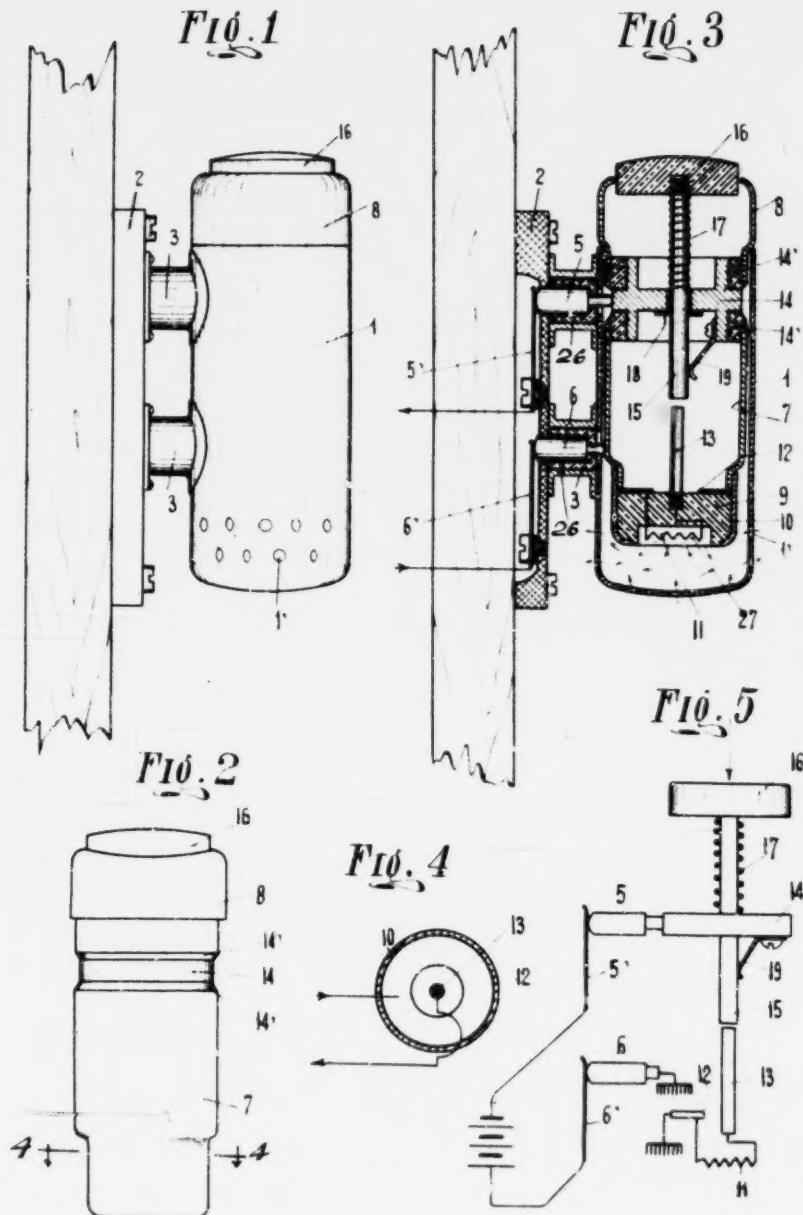
A. ZECCHINI.
ELECTRIC LIGHTER.

APPLICATION FILED APR. 13, 1921.

1,437,701.

Patented Dec. 5, 1922.

2 SHEETS—SHEET 1.



Inventor:-
Alfredo Zecchini
By Laurence Langner
Att'y

A. ZECCHINI.
ELECTRIC LIGHTER.

APPLICATION FILED APR. 15, 1921.

1,437,701.

Patented Dec. 5, 1922.

2 SHEETS—SHEET 2.

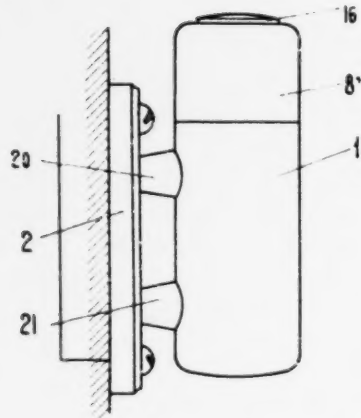


Fig. 6

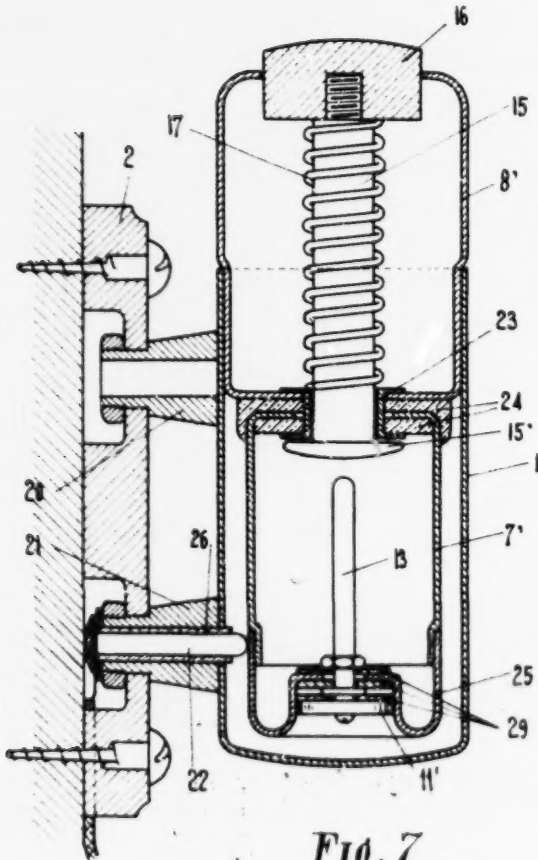


Fig. 7

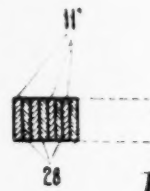


Fig. 9

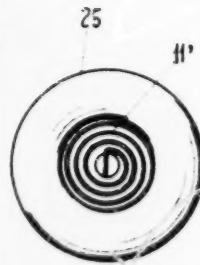


Fig. 8

Inventor:-
Alfredo Zecchini
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Att.

Patented Dec. 5, 1922.

1,437,701

UNITED STATES PATENT OFFICE.

ALFREDO ZECCHINI, OF TURIN, ITALY.

ELECTRIC LIGHTER.

Application filed April 15, 1921. Serial No. 461,550.

To all whom it may concern:

Be it known that I, ALFREDO ZECCHINI, a subject of the King of Italy, and resident of Turin, Italy, have invented certain new and useful Improvements in Electric Lighters (for which I have filed an application in Italy, April 26, 1920), of which the following is a specification.

This invention relates to electric lighters for cigars and the like.

This invention has for object a lighter comprising a plug which is provided with an ignition resistant member and with means for inserting this resistant member in and out of circuit of a source of current, said plug being removably located within a stationary socket having current feeding connections.

Further this invention comprises an arrangement for feeding the current to the ignition resistant member whereby the plug carrying said resistant member may be freely removed from its cooperating socket without any connecting wire being provided between said plug and socket, as well as an automatic switch which holds the circuit open when the device is not in use.

Finally this invention comprises a particular arrangement of the ignition resistant member and other useful features herein-after described and claimed.

The annexed drawings show by way of example two embodiments of the device according to this invention.

In said drawings Figure 1 is the side view of a device according to this invention in inoperative position; Figure 2 is a side view of the plug removed from the socket; Figure 3 is the central section of the device in inoperative position; Figure 4 is the section on line 4—4 of Figure 2; Figure 5 is a diagram of the electric circuit; Figure 6 is a side view of another construction of the device in inoperative position; Figure 7 is a central section of the same to an enlarged scale; Figure 8 is an end view of the removable plug showing the ignition resistant member; Figure 9 is a fragmentary transverse section of the resistant member made to an enlarged scale on line 9—9, Figure 8.

The device shown by Figures 1—3 comprises a socket 1 which is connected by means of hollow arms 3—3 to a plate 2 intended to be secured to a supporting wall. Within said arms 3—3 are located the pins 5—6 which are properly insulated by means

of bushings 26 and bear by one end against the spring contacts 5'—6' connected with the wires of the circuit of a source of current; the opposite ends of said pins project into the hollow of the socket 1.

The socket 1 is further provided with holes 1' for the circulation of air there-through.

Within the socket 1 is removably located a metal plug comprising a grasping head 8 at the end intended to remain out of the socket 1 and heating means at its end entering said socket.

Said plug comprises a metal shell 7 having at one mouth a block 9 of insulating material secured on it by a sleeve 10 screwed on said shell; at its opposite mouth said shell 7 is secured to a partition 14 of conducting material carrying the head 8, insulating rings 14' being located between said partition 14 and the head 8 as well as the shell 7.

The refractory block 9 provides a front recess 27 in which is located a resistant wire 11 having one end connected to the sleeve 9 and shell 7 by means of a conducting washer 12; the opposite end of said wire 11 is connected to a stem 13 projecting centrally into the shell 7.

Said partition 14 has a smaller diameter than the shell 7 and head 8 so as to provide a circular groove, and has a central hole lined with a bushing 18 in which is mounted to slide endwise a central stem 15.

This stem 15 has one end opposite to the end of the stem 13 and its opposite end is provided with a knob 16 of insulating material which projects beyond the edge of the head 8.

A spring 17 bearing against the partition 14 and the knob 16 holds the stem 15 with its end removed from the opposite end of the stem 13; the electric connection of the stem 15 with the partition 14 is ensured by a brush 19 secured to said partition 14 and contacting with said stem.

The arrangement of the partition 14 within the plug is such as when the plug is inserted in the socket 1, the outer rim of the partition 14 contacts with the pin 5 and at the same time the pin 6 contacts with the surface of the shell 7.

The outer surface of the insulating ring 14' between the partition 14 and the shell 7, and the shape of the shell 7 in its portion under the pin 6 must be such that when the plug is removed from its socket the shell 7

leaves the pin 6 before the edge of the shell 7 under the lower ring 14' comes in contact with the pin 5. for the purpose of preventing the source of current from being short-circuited through said pins 5 and 6 and the metal body of the shell 7.

When the plug is inserted in the socket 1, as shown by Figure 3, the partition 14 and the stem 15 are electrically connected with the pin 5, and the washer 12 to which leads one end of the resistant wire 11 is electrically connected with the pin 6 through the metal body of the shell 7.

The circuit is therefore open, the opposite ends of the stems 15 and 13 being removed from each other and it is held open so long as the knob 16 is not depressed.

By depressing the knob 16 against the action of its associate spring 17 the stem 15 is carried in contact with stem 13 connected with one end of the resistant member 11 and therefore the current flows through this resistant member.

When it is desired to use the lighter the knob 16 is pushed down and is held in such a position for some time as necessary for causing the heat developed by the current to make the resistant wire incandescent; thereafter the head 8 is grasped and the plug is removed from its socket the incandescent wire being then adapted to be used for lighting a cigar or the like.

The wire which is made incandescent by the passage of electric current keeps its high temperature for a time quite sufficient for the purpose of igniting a cigar or the like.

At the time the plug is being removed from the socket 1 the source of current is not liable to be short-circuited because the shell 7 leaves the pin 6 before coming into contact with the pin 5, as described.

The Figures 6 and 7 show a simplified embodiment of the lighter according to this invention in which the stationary socket 1 is connected to the plate 2 by an earthed arm 20 and by another hollow arm 21 within which is located a pin 22 insulated by a sleeve 26 and connected with one terminal of a source of current whose opposite terminal is earthed; the inner end of the pin 22 projects into the hollow of the socket 1.

The removable plug intended to be located within the socket 1 consists of two metal shells 7'-8'; the shell 7' has a smaller diameter than that of the hollow of the stationary socket 1 and a portion of the shell 8' has such a diameter as to fit in the socket 1. Said shells 7'-8' are connected at their adjacent ends by means of a conducting sleeve 23 having its edges upturned over the edges of the front walls of said shells, and are insulated from each other by insulating washers 24.

The shells 7'-8' are open at their other ends and the shell 7' carries an end cap 25

providing a space for the ignition resistant member 11'.

This resistant member (see Figures 8 and 9) consists of a strip 11' of a proper metal wound on a spiral together with an adjacent strip 28 of insulating and refractory material; the outer portion of said metal strip 11' contacts with the cap 25, whilst its inner end is electrically connected with a stem 13 concentric with the shell 7' and insulated from the cap 25 by means of insulating washers 29.

At the end mouth of the shell 8' is located the insulating knob 16 secured to a conducting stem 15 which passes through the sleeves 23; this rod is provided with a lower head 15' which is held by a spring 17 removed from the end of the stem 13.

When the parts are in the position shown by Figure 7 the circuit is cut out; by pushing down the knob 16 the stem 15 is lowered and its head 15' is carried into contact with that of the stem 13. Therefore the circuit of the source of current is closed between the pin 22 and the earthed arm 20 through the cap 25, resistant member 11', stems 13-15, sleeve 23, shell 8', one pole of the source being connected to the pin 22 and the other being earthed, as described.

Therefore the current flows through the resistant member 11' and this latter is made incandescent so that when the plug is removed from the socket said resistant member may be used for purpose of lighting a cigar or the like.

The last described embodiment does not require the use of parts of refractory material; its assembly is made more easy and its size is reduced.

In this construction for avoiding the short-circuiting of the source of current it is sufficient that the portion of the shell 8' entering the socket 1 is longer than the portion of the shell 7' lying under the level of the pin 22 when the plug is in position in its socket.

The resistant heating member consisting of a flat metal strip wound together with a strip of insulating material has the advantage that the whole part may be made of a reduced size; therefore the heat is accumulated in a small body and the temperature of this latter is increased, so that it may be used for igniting a cigar or the like after the circuit of the resistance has been held closed long enough for heating it to the required degree.

What I claim as my invention and desire to secure by United States Letters Patent is:—

1. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and

separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, and means controlling the circuit in which said resistant member is inserted.

2. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, means controlling the circuit in which said resistant part is inserted and means holding said controlling means in open-circuit position when the device is out of service.

3. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being in circuit with said resistant part and a knob-controlled spring holding said circuit open when the device is out of service.

4. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, said plug having an outer recess, a heating resistant part in said recess, feeding parts in said socket each connected with a pole of a source of electric current, parts in said plug adapted to contact with said feeding parts and connected with the ends of said resistant part and a spring switch holding normally open the circuit of said resistant part.

5. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said con-

ducted with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part.

6. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said conducting member, a stationary part connected with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part, and means for preventing said contacting parts of the plug from short-circuiting the source of current when the plug is being removed from said socket.

7. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said conducting member, a stationary part connected with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part, said feeding parts of the socket and cooperating parts of the plug being so shaped and positioned as to prevent the part of the plug entering said socket from short-circuiting the source of electric current when the plug is being removed from said socket.

8. An electric lighter for cigars and the

ing means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, 5 a heating resistant member comprising a flat resistant metal strip wound together with an insulating refractory ribbon, this resistant part being located in said removable member, conducting means in this re-

movable member adapted to contact with 10 said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, and means controlling 15 the circuit in which is inserted said resistant part.

Signed at Turin, Italy, this 22 Mar. 1921.
ALFREDO ZECCHINI.

June 2, 1925.

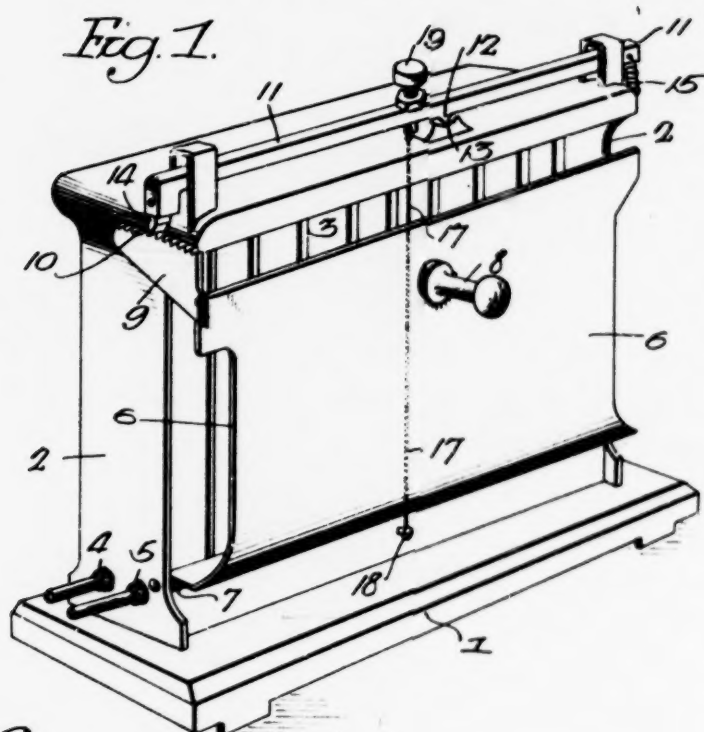
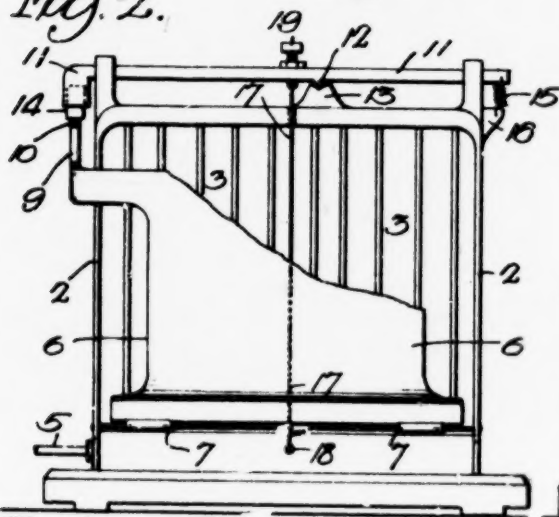
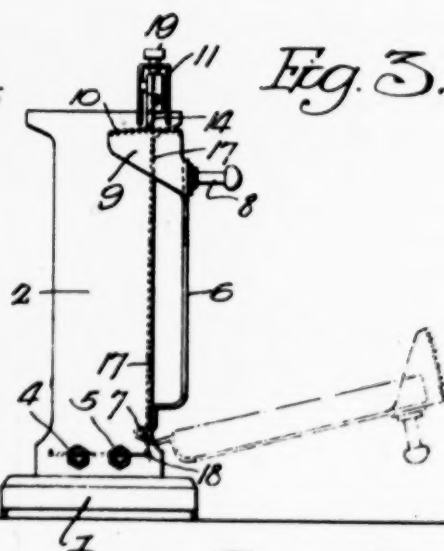
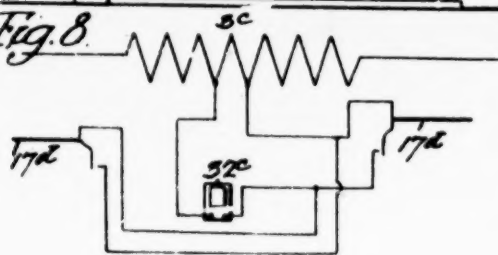
F. E. HURXTHAL ET AL

1,540,628

AUTOMATIC TEMPERATURE CONTROL FOR BREAD TOASTERS

Filed Dec. 1, 1924

2 Sheets-Sheet 1

*Fig. 2.**Fig. 3.**Fig. 8.*

Inventors
 Frederick E. Hurxthal,
 Alpheus O. Hurxthal.
 by their Attorneys.
 Howson & Howson

Fig. 4.

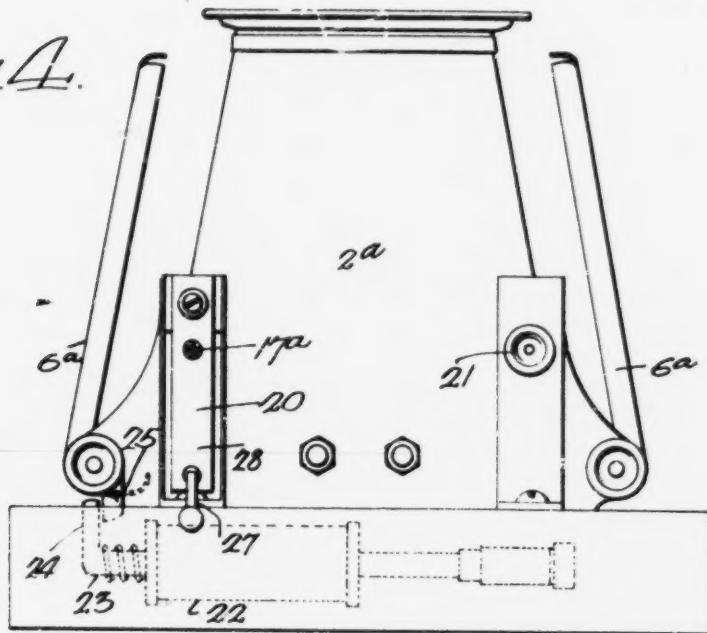


Fig. 5.

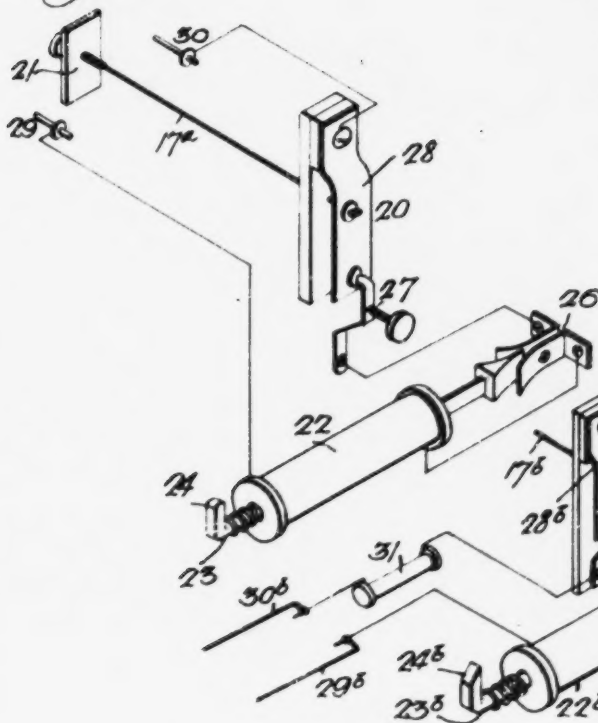


Fig. 7.

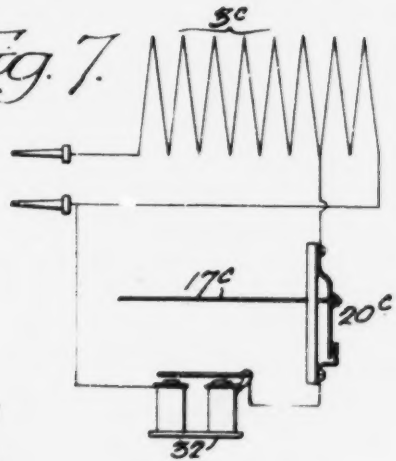


Fig. 6.

Inventors
 Frederick E. Hurxthal,
 Alpheus O. Hurxthal
 by their Attorneys
 Hecox & Howard

Patented June 2, 1925.

1,540,628

UNITED STATES PATENT OFFICE.

FREDERICK E. HURXTHAL, OF SALEM, OHIO, AND ALPHEUS O. HURXTHAL, OF PHILADELPHIA, PENNSYLVANIA.

AUTOMATIC TEMPERATURE CONTROL FOR BREAD TOASTERS.

Application filed December 1, 1924. Serial No. 753,155.

To all whom it may concern:

Be it known that we, FREDERICK E. HURXTHAL and ALPHEUS O. HURXTHAL, residing, respectively, in Salem, Columbiana County, Ohio, and Philadelphia, Philadelphia County, Pennsylvania, have invented certain Improvements in Automatic Temperature Control for Bread Toasters, of which the following is a specification.

The object of this invention is to provide means, such as a sensitive element, for indicating automatically that an edible, such as bread, has been toasted, or seared, to a desired degree, said indicating mechanism being either means for separating the edible from the heating element or the operation of an audible or visible signal. It is also possible to break the electric circuit leading to the toaster.

In the present instance, the invention is shown in connection with an electric toaster of a known type, but it will be understood that it can be applied to a toaster used in connection with any heating device.

In the accompanying drawings:

Fig. 1 is a perspective view of an electric bread toaster embodying our invention;

Fig. 2 is a side view, partly broken away;

Fig. 3 is an end view;

Fig. 4 is a view illustrating a toaster provided with electric release mechanism for the toast carrier;

Fig. 5 is a diagrammatic view showing the electric circuit of the device illustrated in Fig. 4;

Fig. 6 is a diagrammatic view illustrating an electric circuit breaker for the main circuit of the heating element of the toaster;

Fig. 7 is a diagrammatic view illustrating an auxiliary circuit, the opening and closing of which operates an audible, or visible, signal; and

Fig. 8 is a diagrammatic view showing a signaling circuit, which is controlled by sensitive elements on each side of a double toaster.

Referring to Figs. 1, 2 and 3 of the drawings, these illustrate an electric toaster having a mechanical means for releasing the bread carrier, actuated by a sensitive element. The base 1 of the electric toaster supports a frame 2. This frame is provided with the ordinary electric heating element 3. The wires supplying the electric current are attached to terminals 4 and 5.

A bread carrier 6 is pivoted, in the present instance, at 7, to the frame 2. The carrier has a hand hold 8. When the carrier 6 is raised, a slice of bread is held parallel with the heating element 3. On one end of the carrier is an arm 9. This arm has a series of ratchet teeth 10. A bar 11 extends across the toaster and has a knife edge point 12 that rests in a V-bearing 13 on the top of the frame.

On one end of the bar is a pawl 14, which is arranged to engage one of the teeth 10 of the arm 9 of the bread carrier. Attached to the other end of the bar is a spring 15, which is connected to a bracket 16 on the frame.

17 designates a wire forming the expansion element. This wire is attached at 18 to the lower portion of the frame 2 and extends through an opening in the upper portion of the frame. It is attached to an adjusting screw 19, which is threaded into the bar 11. On the screw is a jamb nut.

We have discovered that the temperature of a slice of bread, when it is toasted correctly, is fairly definite. The surface of the untoasted bread is comparatively cool, and the wire, or other expansive element 17, assumes the temperature of the bread against, or near, which it is placed. The temperature of the expansion element increases in proportion to the increase in temperature of the surface of the bread. When the surface of the bread has reached a certain degree of heat, and has become toasted, the element 17 has expanded to such an extent as to allow the spring 15 to raise the pawl 14 on the bar 11, clear of the teeth 10 of the bread carrier, allowing the carrier to turn on its pivot and to fall away from the heating elements 3, as shown by dotted lines in Fig. 3.

The bread, one side of which has been toasted to the proper degree, is turned and the carrier is again raised. In the meantime, the wire—or other expansion element—has contracted sufficiently to allow the pawl on the bar 11 to re-engage the teeth of the carrier when raised. The carrier is held until the other surface of the bread is toasted and then it is released again.

By turning the screw 19, the mechanism may be adjusted to allow the bread to remain for different periods so that the surfaces of the bread can be toasted to any degree desired.

While one form of bread toaster to which

the invention is applied has been described, it will be understood that the invention can be applied to other forms of toasters. Although only one expansion wire is shown, there may be two or more wires, if desired. Other expansion, or variable, elements, or materials, of varying electrical conductivity may be used. These elements should be arranged so that they will be close to, or against, the surface of the bread to be toasted.

The mechanism for maintaining the carrier in the toasting position may be a mechanical latch, such as illustrated in Figs. 1, 2 and 3, or an electrical element, such as a solenoid. In fact, any device, which can be operated by a sensitive element to release the carrier, or to move the electric heating elements away from the carrier, or to make an audible or visible signal, or to cut out the electric current leading to the toaster, may be employed.

In Figs. 4 and 5, a toaster is illustrated, in which the sensitive wire 17^a is arranged horizontally and is attached to a circuit maker 20 at one side of the toaster frame 2^a, and is also attached to adjusting means 21 at the opposite side thereof. A solenoid magnet 22 is so located that its core 23, which has a head 24, is arranged to engage an arm 25 on the bread carrier 6^a, when the core is drawn into the magnet. One end of the solenoid magnet 22 is connected to a wire 29 that leads to the heating element. The opposite end of the solenoid magnet is connected to one arm of a circuit breaker 26. The other arm of the circuit breaker is connected to the terminal 27 of the circuit maker 20 to which the sensitive wire 17^a is attached. The contact arm 28 of the circuit maker is connected to the other main wire 30, leading to the heating element.

In Fig. 6 is shown, in diagram, an arrangement by which the circuit leading to the heating element is interrupted when the bread has been toasted to the degree desired, so as to discontinue the toasting.

The core 23^b of the solenoid magnet 22^b has a cam 24^b, which is arranged to actuate a switch, or other cut-out device, in the circuit leading to the heating elements. One end of the magnet 22^b is connected to a main wire 29^b and the other end of the magnet is connected to one arm of a circuit breaker 26^b. The other arm of the circuit breaker is connected to the arm 28^b of the circuit maker 20^b, while the terminal 27^b is connected to the main wire 30^b. A resistance coil may be placed in the circuit, as at 31, if desired.

The cam may not only actuate a switch, or other device, to break the circuit leading to the electric heating element, but may also trip the bread carrier, if desired.

In Fig. 7 an arrangement is shown, in

which a buzzer, or electric bulb, 32 is in a circuit tapped off of the heating element 3^c. The circuit maker 20^c, which is controlled by the sensitive element 17^c is in the circuit. When the wire, or other element, elongates, the circuit maker closes the circuit and the buzzer gives an audible signal. A bulb may be substituted for the buzzer, if desired, which is illuminated when the circuit is closed to give a visible signal that the bread has been toasted to the degree desired.

In Fig. 8 is shown, in diagram, one arrangement of providing a signal controlled by a sensitive element 17^d on each side of a double toaster and connected through an auxiliary circuit from the heating element 3^e with a signal, such as a buzzer, 32^e, or an electric light.

In the claims, the word "indicating" is used in the broad sense to include separating the bread, or other material, and the heating element, operating the circuit of the heating element, or giving an audible, or visible, signal.

While the toasting of bread has been described, it will be understood that the invention can be used for toasting, or searing, other material without departing from the main features of the invention.

We claim:

1. In a toasting device, a sensitive element located in such relation to the surface of the material to be toasted that it will be affected by the surface temperature of the material, and mechanism, actuated by the sensitive element, for indicating when the material is toasted.

2. The combination in a toaster of a heating element; a carrier for the material to be toasted; and automatic means for stopping the toasting of the material when the surface of the material being toasted has reached a given degree.

3. In a toasting device, a sensitive element located in such relation to the surface of the bread to be toasted that it will be affected by the surface temperature of the bread and will stop the toasting of the bread when a given temperature is reached.

4. The combination in a toaster, of a frame having a heating element; a bread carrier arranged to hold the bread in position to be toasted by said element and means for automatically separating the bread and the heating element when the surface of the bread being toasted has reached a given temperature.

5. The combination in a toaster, of a frame; an electric heating element thereon; a bread carrier arranged to be located in close proximity to the heating element; means for retaining the bread carrier in toasting position; and an expansion element controlling said means, said element being in such position, in respect to the surface of

the bread, as to be affected by the surface temperature of the bread.

6. The combination in a toaster, of a frame; an electric heating element thereon; a bread carrier pivoted to the frame; a bar arranged to hold the frame in front of the electric heating element; and a wire attached to the frame and to the bar, said wire being located between the heating element and the bread carrier and arranged in such position, in respect to the surface of the bread, as to be affected by the surface temperature of the bread.

7. The combination in a toaster, of a

frame; an electric heating element thereon; 15
a bread carrier pivoted to the frame; a
toothed arm on the carrier; a bar pivotally
mounted on the frame; a pawl on the bar
arranged to engage the toothed arm of the
carrier; a spring for withdrawing the pawl; 20
and a wire attached to the frame and to the
bar and extending between the electric heat-
ing element and the bread and arranged in
such position, in respect to the surface of
the bread, as to be affected by the surface 25
temperature of the bread.

FREDERICK E. HURXTHAL.

ALPHEUS O. HURXTHAL.

DISCLAIMER

1,540,628.—*Frederick E. Hurxthal*; Salem, Ohio, and *Alpheus O. Hurxthal*, Philadelphia, Pa. AUTOMATIC TEMPERATURE CONTROL FOR BREAD TOASTERS. Patent dated June 2, 1925. Disclaimer filed January 9, 1932, by the assignee, *Proctor & Schwartz Electric Company*.

Therefore disclaims from the specification the paragraph appearing at lines 84 to 89 of page 2 of the specification, which reads as follows:

"In the claims, the word 'indicating' is used in the broad sense to include separating the bread, or other material, and the heating element, operating the circuit of the heating element, or giving an audible, or visible signal."

Your petitioner also disclaims from the scope of claim 1 all devices except those in which the indicating means, referred to in said claim, is for indicating visibly or audibly.

[*Official Gazette February 9, 1932.*]

March 29, 1927.

B. L. METZGER

1,622,334

AUTOMOBILE CIGAR AND CIGARETTE LIGHTER

Filed Nov. 30, 1925

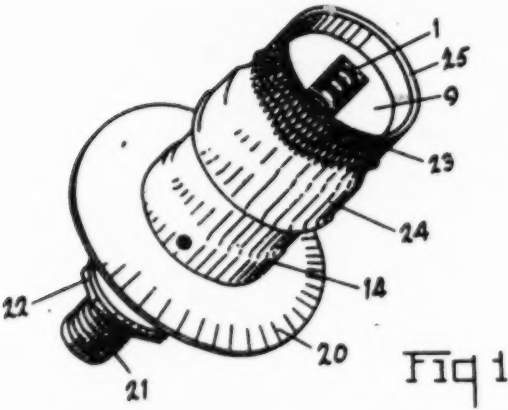


Fig 1

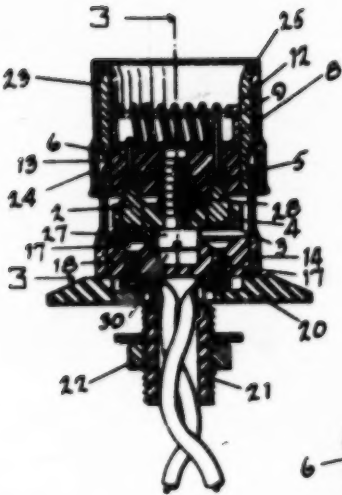


Fig 2

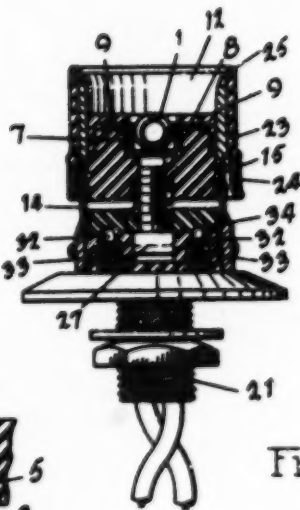


Fig 3

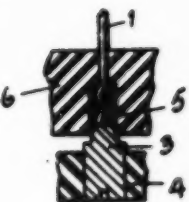


Fig 5

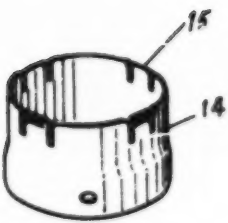


Fig 4

Inventor
Benjamin L Metzger
By *Frank C. Compton*
Attorney

Patented Mar. 29, 1927.

UNITED STATES PATENT OFFICE.

BENJAMIN L. METZGER, OF TOLEDO, OHIO.

AUTOMOBILE CIGAR AND CIGARETTE LIGHTER.

Application filed November 30, 1925. Serial No. 72,134.

My invention has for its object to provide an electric lighter for cigarettes and cigars, wherein a resistance element may be connected to a source of an electric current upon the operation of a removable member that encloses the resistance element, against a resilient means, that automatically operates to maintain the resistance element disconnected from said source, but which is supported in position for connection and yet may be readily removed from its support and used. The invention has for its objects other advantages and features which will appear from the following description and upon examination of the drawings.

The invention may be contained in cigar and cigarette lighters that differ in their details of construction. To illustrate a practical application of the invention I have selected a structure as an example of structures that contain the invention and shall describe it hereinafter. The structure selected for purposes of illustration is shown in the accompanying drawings.

Figure 1 of the drawings is a perspective view of the cigar and cigarette lighter referred to. Fig. 2 is a view of a section taken through the longitudinal axis of the cigar lighter. Fig. 3 is a view of a section taken on the plane of the line 3—3 indicated in Fig. 2. Fig. 4 is a view of a shell for supporting resistance element and yieldingly retaining the element in position for connection with the source of current. Fig. 5 is an enlarged view showing the manner in which the resistance element may be removably connected.

By my invention a resistance element 1 is connected to terminals 2 and 3 which are embedded in or contained within an insulating body but which may be uncovered in order to establish electric connection with a source of an electric current. The resistance element is so connected to its terminals that it may be readily separated from its terminals and the resistance element and the terminals are so supported that they may be removed from their position for connection with the source of current and used without having connected therewith the wires that are commonly used to connect resistance or heat coils directly to the source. The resistance element, which is preferably made in the form of the coil having a relatively large diameter to prevent undue clogging of the coil by the ashes

of cigars or cigarettes, is removably connected to the terminals 2 and 3. The terminals 2 and 3 have sockets 5 for receiving the ends of the wire that forms the resistance element 1. The ends of the wire may substantially fit the sockets 5 or the ends of the wire may be bent or clamped so as to be frictionally held in position within the terminals 2 and 3 as shown in Fig. 5. The terminals 2 and 3 are threaded into a block 6 of insulating material and the resistance element 1 is located in a recess 7 that is formed in the block. Asbestos 8 may be located between the resistance element 1 and the block to prevent direct contact between the resistance element and the block and also to form a means for preventing the transfer of heat from the resistance element. A sheet metal ferrule 9 may be used to cover the inner end of the block 6. The ends of the wire that form the resistance element 1 pass down through openings formed in the block and into the sockets 5 of the terminals 2 and 3. Thus the resistance element 1 may be removed from the lighter and replaced as may be desired. This is for purposes of repairs or replacement. The block 6 is located in the lower end of a sheet metal sleeve 12. The sleeve 12 is provided with a circular depression 13 near its lower end. A second sheet metal shell or sleeve 14 is fixedly secured in position for supporting the electric heating element and its terminals. The shell 14 is provided with a plurality of tongues 15 which are depressed within the circumference of the upper end of the shell 14 and form elastic means for engaging the lower end of the sleeve 12 and particularly in the circular depression 13. A cross section of the surface of the depression taken through the axis of the sleeve 12 is curved so that the tongues tend to maintain their ends at the bottom of the depression 13 so that when the sleeve 12 is pushed downwards the ends of the tongues will ride upon the upper portion of the surface of the depression 13 and when the shell 12 is released the tongues tend to return to the position such that the tongues will engage the bottom of the depression. The terminals 2 and 3 protrude from the block 6 and consequently contact may be established with the terminals when they are depressed against the resiliency of the tongues 15.

A pair of contacts 17 form terminals of

the electric wires that lead to a suitable source and are secured in position in a block 18 of insulating material. The contacts 17 may be formed of flat headed screws, the heads of the screws being counter-sunk to such a point that their upper surfaces are located slightly below the surface of the block 18. Thus when the sleeve 12 is rotated and while it is being depressed against the resiliency of the tongues 15 the terminals 2 and 3 will be brought to a stop by their entrance into the counter-sunk portions of the block 18. This will bring the terminals 2 and 3 in alinement with the contacts 17. The terminals 17 are located the same distance from the axis of the shell 14 that the terminals 2 and 3 are located from the axis of the sleeve 12 and consequently when the sleeve 12 is pressed downward against the resiliency of the tongues 15 and the terminals 2 and 3 are in alinement with the terminals 17, connection will be made between the source of supply of an electric current and the resistance element 1. The block 18 may be secured to a collar 20 or may be formed integral therewith. Also it may be secured to a sleeve 21 which may be inserted in the instrument board of an automobile and the lighter may be secured in position by means of the nut 22. The collar 20 and sleeve 21, whether made integral with the block 18 or otherwise, are preferably formed of insulating material. Also the sleeve 12 is preferably covered by a sleeve 23 of insulating material to prevent electrical contact with the current when the instrument is in use. The lower end of the sleeve 23 is preferably flared as at 24 in order to permit free movement of the upper end of the shell 14 except as such movement is resisted by the resiliency of the tongues 15. The sleeves 12 and 23 form a shell 25 for containing the resistance element.

In order to prevent the operator's hand from coming in contact with the terminals 2 and 3 which may be heated by conduction of the heat from the resistance element 1, the insulating head 4 covers or encloses the terminals. The insulating body 4 is preferably in the form of a disc in which the ends of the terminals 2 and 3 are located. The disc 4 is secured in position by means of the bolt 27 which is threaded into the block 6 and the spring 28 which is located in a socket 29. The disc 4 is normally held between the outer end of the spring 28 and the head of a bolt 27. A socket 30 is formed in the block 18 for receiving the lower end portion of the head of the bolt 27. This also aids in locating the shell 25 in coaxial relation with respect to the sleeve 14 and the block 18 and provides for the longitudinal, that is, the axial movement of the bolt 27 when the shell 25 is depressed. When the shell 25 is depressed the disc 4 is carried

down until it strikes the surface of the block 18. Upon further movement of the shell 25 the terminals project from the lower surface of the block 4 so that they can enter the counter-sunk portions of the block 18 and make contact with the contacts 17, that is, with the heads of the screws that form the terminals of the wires that are connected to the source of electric current, when the terminals 2 and 3 are in alinement with the contacts 17. In order that this position may be readily detected by the operator of the instrument, a pair of spring pressed pins 32 are located in the block 18 and so as to protrude from the upper surface of the blocks. Springs 33 are located in sockets formed in the block and between the collar 20 and the lower ends of the pins 32. The pins 32 are thus yieldingly pressed upwards. The disc 4 is provided with a pair of recesses or holes 34 for receiving the ends of the pins 32. The pins 32 and the holes 34 are located diametrically opposite and consequently within the limitations of a one half turn the pins will enter the holes 34 and thus the alinement of the terminals 2 and 3 with the contact 17 may be quickly determined.

In the operation of the lighter, the user depresses the shell 25 until the lower ends of the terminals 2 and 3 strike the upper surface of the block 18. The shell 25 is then rotated until the pins 32 enter the holes 34 when further rotation will be stopped and by the inward pressure which is maintained in order to push the shell 25 down against the action of the tongues 15 and the spring 28, the terminals 2 and 3 will make contact with the contacts 17. The shell 25 is held in this position until the resistance element 1 has become sufficiently heated to light a cigar or cigarette. The shell 25 may then be readily pulled from the shell 14 and the lighter placed against the end of a cigar or cigarette until it is lighted. The shell 25 may then be replaced on the end of the shell 14 where it will be resiliently held in position for connection by the electric heating element and the source of current.

I claim:

1. In a cigar and cigarette lighter, a shell, a pair of electric terminals located in the shell, a second shell telescopically supported by the first named shell, the first named shell having a circular depression and the second named shell having tongues for maintaining the first named shell in position relative to the second named shell, a resistance element located in the second named shell and having terminals adapted to make contact with the electric terminals in the first named shell.

2. In a cigar and cigarette lighter, a shell, a pair of electric terminals located in the shell, a second shell telescopically supported by the first named shell, a resistance element located in the second named shell and having

terminals adapted to make contact with the electric terminals in the first named shell, a disc resiliently supported on the end of the second named shell for enclosing the outer ends of the terminals of the second named shell, the said disc having recesses, a block supported in the first named shell and spring pressed pins protruding from the said block for engaging in the recesses of the said disc to place the terminals of the second named shell in alinement with the electric terminals of the first named shell.

3. In an electric cigar and cigarette lighter, a shell, a pair of electric terminals connected to a source of supply of an electric current and located in the shell, a second shell telescopically and removably supported by the first named shell, a resistance element located in the second named shell and having contacts at its ends adapted to make contact with the electric terminals in the first named shell and an elastic means for normally maintaining the contacts separated from the terminals.

4. In an electric cigar and cigarette lighter, a shell, a pair of electric terminals connected to a source of electric current and located in the shell, a second shell, a resistance element located in the second named shell and having contacts at its ends adapted to make contact with the electric terminals in the first named shell, the first named shell having elastic means for resiliently holding the second named shell in axial alinement with the first named shell and means located on the second named shell for normally covering the contacts.

5. In an electric cigar and cigarette lighter, a shell, a pair of terminals connected to a source of supply of an electric current located in the shell, a second shell telescopically supported by the first named shell, a resistance element located in the second named shell and having contacts connected to its ends adapted to make contact with the electric terminals in the first named shell, a spring pressed disc connected to the first named shell, the ends of the contacts of the second named shell being located within the said disc, the first named shell having means for uncovering the contacts when the second named shell is moved inwardly with respect to the first named shell.

6. In an electric cigar and cigarette lighter, a shell, a pair of electric terminals located in the shell, a second shell telescopically and removably supported by the first named shell, a resistance element located in the second named shell and having contact connected to its ends and adapted to make contact with the electric terminals in the first named shell, a disc resiliently supported on the end of the second named shell for enclosing the outer ends of the contacts, a block supported in the first named shell and having recesses the ends of the terminals located in the bottom of the recesses.

7. In a cigar and cigarette lighter, a shell, a pair of electric terminals located in the shell, a second shell telescopically supported by the first named shell, a resistance element located in the second named shell and having terminals adapted to make contact with the electric terminals in the first named shell, a disc resiliently supported on the end of the second named shell for enclosing the outer ends of the terminals of the second named shell, the said disc having recesses, a block supported in the first named shell and spring pressed pins protruding from the said block for engaging in the recesses of the said disc to place the terminals of the second named shell in alinement with the electric terminals of the first named shell and means for elastically holding a second named shell in position and the contacts away from the terminals.

8. In a cigar and cigarette lighter, a shell, a pair of electric terminals located in the shell, a second shell telescopically supported by the first named shell, a resistance element located in the second named shell and having terminals adapted to make contact with the electric terminals in the first named shell, a disc resiliently supported on the end of the second named shell for enclosing the outer ends of the terminals of the second named shell, a block supported in the first named shell and having recesses, the outer ends of the terminals located in the bottom of the recesses and means for elastically holding the second named shell in position and the contacts away from the terminals.

In testimony whereof I have hereunto signed my name to this specification.

BENJAMIN L. METZGER.

Jan. 1, 1929.

1,697,686

A. F. LANGOS

CIGAR LIGHTER

Filed Feb. 24, 1927

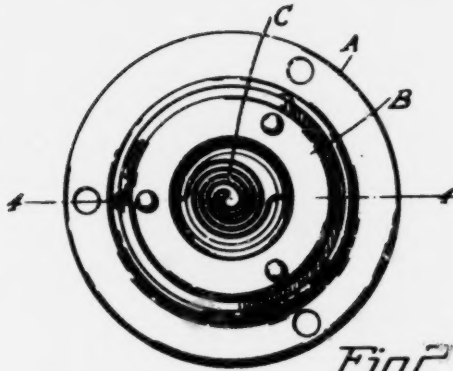


Fig. 2

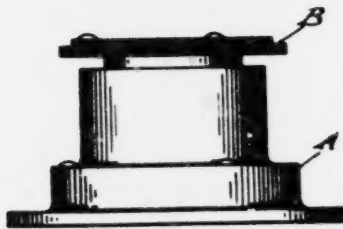


Fig. 1

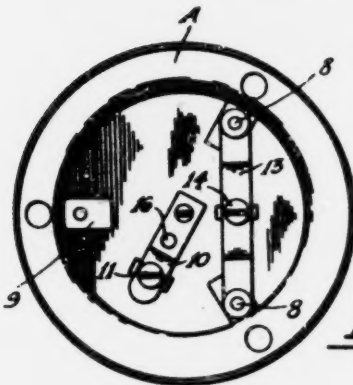


Fig. 3

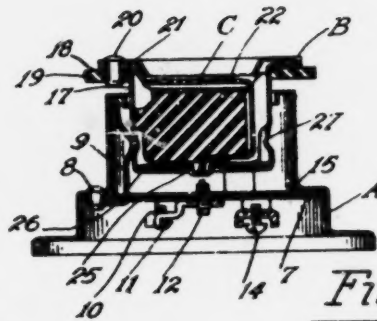


Fig. 4



Fig. 6

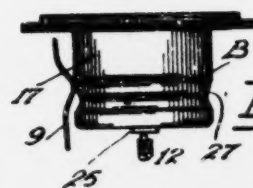


Fig. 5

Inventor:
 Alfred F. Langos
 George C. Mueller
 Atty.

Patented Jan. 1, 1929.

1,697,686

UNITED STATES PATENT OFFICE.

ALFRED F. LANGOS, OF CHICAGO, ILLINOIS.

CIGAR LIGHTER.

Application filed February 24, 1927. Serial No. 170,499.

My invention relates to cigar lighters and has to do more particularly with electrically heated cigar lighters of the character adapted for lighting cigars and cigarettes, although not limited to this particular use.

An object of my invention is to provide a so-called wireless cigar lighter, that is, one in which the lighting element is supported in a base of some kind and adapted to be heated while held in the base and then removed from the base for use, the base and lighting element being entirely independent when separated, that is, with no electrical or mechanical connection between the parts.

Another feature of my invention is the provision of such a device in which the lighting element is normally electrically disconnected from the heating circuit but may be manually manipulated to momentarily close the heating circuit, after which the device may be removed for use.

Another feature of my invention is the provision of an improved form of resistance or heating element in the form of a double spiral having freely extending ends by which the element may be supported. Other features and advantages of my invention will be more particularly pointed out in the ensuing portion of the specification and appended claims.

For a better understanding of my invention reference is to be had to the accompanying drawing, in which—

Fig. 1 is a side elevation of the assembled device;

Fig. 2 is a top plan view of Fig. 1;

Fig. 3 is a bottom view of Fig. 1;

Fig. 4 is a transverse sectional view along the line 4—4 of Fig. 2;

Fig. 5 is a view of the lighting element in its manipulated or separated position whereby its heating circuit is closed; and

Fig. 6 is a plan view of the resistance or heating element before being placed in the supporting plug.

Referring now more in detail to the invention as illustrated, I provide a suitable base or supporting member A in the form of a socket adapted to receive the heating element plug B which is adapted to be inserted in an opening in the top of the socket. The base A is constructed to support suitable current supply terminals to which the electrical conductors are to be secured, and in the present instance I provide an insulating support for the terminals in the form of a fibre disk 7 secured to the base A by three rivets 8, which

rivets also act to hold corresponding springs 9. As to the terminals, I provide one terminal plate 10 which is riveted to the fibre disk 7 and has a conductor clamping screw 11 threaded therein. This terminal plate 10 also has a central contact screw threaded into the plate 10 so as to provide adjustment, this screw having a suitable contact end preferably in the form of a platinum tip adapted for contact with the plug, as will be later described. A second terminal member 13 in the form of a metal plate is riveted to the base by the same rivets 8 that secure two of the springs 9, thus this plate 13 is electrically connected with these springs 9 and with the base A so that they all are in common electrical connection and may act as the so-called ground terminal of the device. That is, if the base A is secured directly to a grounded portion of the car, that is, for instance, the metal instrument plate, the springs 9 are thus adapted to carry this grounded connection to the plug and thus act as one conductor of the circuit, as will more clearly appear. This plate 13 has a central clamping screw 14 so that a conductor may be secured thereto if desired. A mica sheet 15 is interposed between the fibre disk 7 and the base A, thereby acting to insulate the end of the rivet 16 by which the terminal plate 10 is fastened to the disk 7 so as to prevent accidental contact between this element and the plug.

Now as to lighting element B, this is in the form of a plug shaped device comprising a metal casing 17 having a flange 18 to which an insulating ring 19 is secured by which the device may be manipulated by the operator and thus avoid placing the hands in contact with any electrically charged element. This ring 19 is secured to the plug sleeve 17 by rivets 20 which also pass through an upper clamping plate 21. Within the plug casing 17 is a suitable resistance element supporting member in the form of a porcelain plug 22 cupped at its upper end to receive the resistance or lighting element C. This element C is preferably made up in a self-sustaining shape and to this end is formed up of a continuous wire resistance comprising two spirals, the turns of one being interposed between the turns of the other and connected together at their inner ends, the outer ends 23—24 extending freely to provide supporting or attaching means therefor. I preferably make this resistance element of wire sufficiently

thick to provide self support, that is, so that it will retain its shape although the cigar or cigarette may be pressed against it when being lighted.

5 In order to support this resistance element C I use the said freely extending ends thereof for this purpose and also to act as conductors to the element and therefore the end 23 is inserted between the plug shell 17 and the clamping plate 21. Thus the heating element is supported by the end and also in electrical contact with the sleeve 17 which acts as an electrical conductor to the device, as will presently appear. The free end 24 of the resistance element extends downwardly through a passage in the porcelain plug 22 and then to the center of the device where it is secured to a contact plate 25 carrying a platinum contact element for engagement with the cooperating contact 12 when the plug is depressed in the base socket. This brass plate 25 is held in the plug by having its outstanding ends interposed between the sheet of mica 26 which lies between the end of the shell 17 and the porcelain plug 22. The shell 17 has an annular groove 27 which receives the bent-in portion of the retaining springs 9 so as to yieldingly or readily removably hold the plug in the socket. These elements 9—27 are so related that when the plug is inserted in the socket it is normally held in inoperative position, that is, with the electrical circuit therefor interrupted because of the non-engagement of contacts 12—25. In order to close this heating circuit the plug B is manipulated by pressing it inwardly into the socket against the tension of the springs 9 until the contacts 12—25 close to supply the electrical heating circuit for the plug. When the plug is so depressed the springs 9 are moved outwardly as indicated in Fig. 5 with the rounded portion engaging the groove 20 sufficiently so that when manual pressure upon the plug B is released these springs pressing inwardly will force the plug B back into its normal position to interrupt the heating circuit.

Referring now to the operation of the device and assuming that an electrical heating circuit has been connected to the base terminal plates 10—13, in order to heat the lighting element the operator grasps the insulating ring 19 of the plug and presses the plug inwardly against the tension of springs 9 until the contacts 12—25 are closed. In the ordinary device as I have used it on six volts, which is the usual voltage on an automobile, the lighting element C becomes sufficiently incandescent in about three seconds that the plug retains enough heat so that it may be passed around to light three or four cigarettes or cigars. Thus, assuming the plug has been depressed until the resistance element becomes incandescent as stated, the plug is then withdrawn entirely from the base

and is thus independent of any mechanical or electrical connection with the base and may be freely passed to the occupants of the car or wherever it is used. After being used the plug is replaced in the socket and is held by the springs 9 in such a position that the lighting circuit is normally interrupted. When the device is to be used again the plug is simply depressed until sufficiently heated and then withdrawn for use.

Although for the purpose of illustration I have shown a preferred form of my invention, I contemplate constructing it and using it in other ways than herein illustrated and described and therefore do not desire to be limited to the exact structure shown but aim to cover all that which comes within the spirit and scope of the appended claims.

What I claim as new and desire to secure by United States Letters Patent is:—

1. An electrically heated lighting element of the character described comprising a resistance element shaped in the form of two spirals the turns of one being interposed between the turns of the other and connected together at their inner ends with the outer ends freely extending for supporting the element and the spirals being all in substantially the same plane.

2. A wireless electrically heated cigar lighter including a current supply terminal carrying base and a cigar lighting element independent of any permanent wiring interconnection, means for readily removably holding the lighting element in the base so as to permit removal of the element for use, and means for momentarily connecting an operating circuit for the element to heat the latter before removal from the base for use, said holding means including a yielding holding spring mounted to serve as an electrical connection between the base and lighting element.

3. An electrically heated cigar lighter comprising a base in the form of a shell, an insulating disc across the shell and having a contact at the center thereof, a plurality of spring contacts secured to the base with a center portion bellied toward the center of the shell, a plug heating element adapted to be inserted in the base shell and comprising a plug shell with an annular groove which the bellied portion of the spring contacts engage, a center contact extending through a central opening in the plug shell, and a heating element having one terminal connected to the plug shell, and the other terminal connected to said center contact, the center contacts on the shell and insulating disc being normally separated, with the spring contacts engaging in said annular groove, but the plug being movable bodily inwardly in response to manual pressure temporarily to close the circuit and energize the element, the plug being removable entirely

from the base shell when the element is heated.

4. The cigar lighter defined in claim 3 wherein said plug shell has an insulating plug center with the lighting element spaced from the insulating plug center and supported by its terminals, one of said terminals being secured to the plug center and the other terminal extending through a passage in said insulating center to engage said center contact.

5. The cigar lighter defined in claim 3 wherein said base shell is flanged to serve as a stop for said spring contacts, so that ample tension may be had therein without permitting too great inward movement when the plug is removed such as would make reinsertion of the plug difficult.

6. The cigar lighter defined in claim 3 wherein said plug shell is flanged and has a heat insulating ring riveted thereto for grasping the plug with the fingers, the riveting of the ring serving to secure the heat element terminal in contact with said plug shell.

7. An electrically heated cigar lighter including two principal members in the form of a base and a cigar lighting plug, said plug containing an electric heating element, re-

movable from the base when the element has been heated, a center terminal on both the base and plug, resilient means normally holding said center terminals separated, and separate circularly disposed terminal means on one of the members with a cooperating terminal on the other member adapted to form contact at any radial position of the plug so that said plug may be inserted into the base at any position and electrical contact established with the base through the terminal by simple inward pressure only of the entire plug body.

8. In an electric cigar lighter a base having a socket with a central terminal and spring contacts at the side, at least one of which is adapted to serve as a second terminal and a plug having an outer shell, a heating element with one lead connected to the shell and central terminal connected to the other element lead, said spring contacts normally holding the two center terminals separated and bodily inward movement only of the plug serving to bring said terminals together.

In witness whereof, I hereunto subscribe my name this 8th day of February, 1927.

ALFRED F. LANGOS.

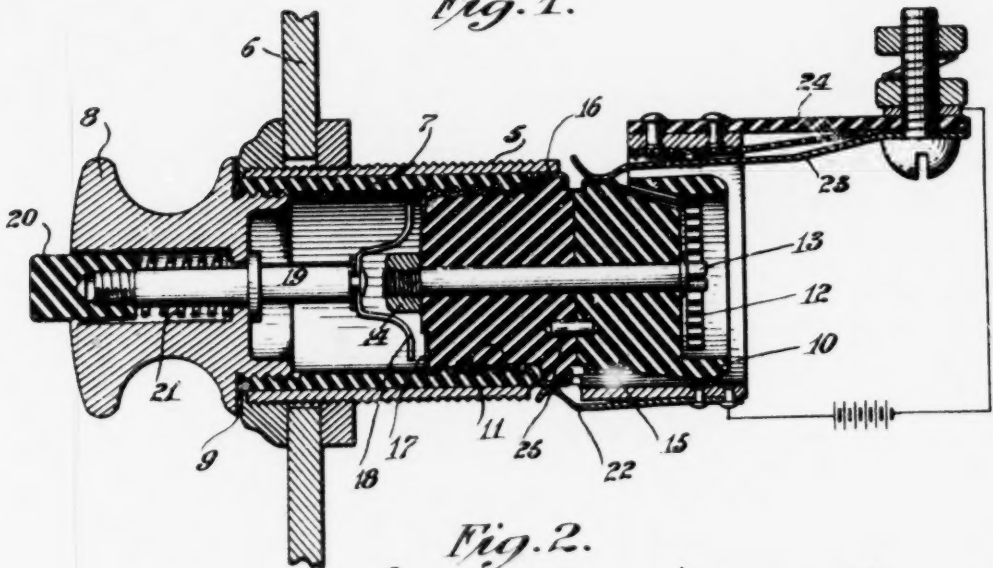
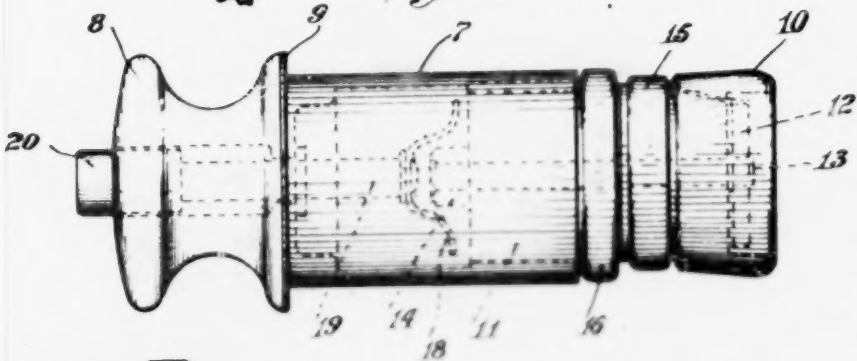
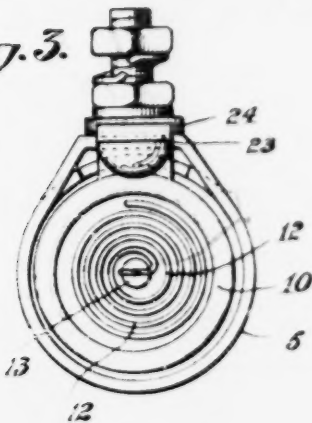
Oct. 22, 1929.

S. L. WOLFSON ET AL

1,732,784

CIGAR LIGHTER

Filed Oct. 8, 1928

Fig. 1.*Fig. 2.**Fig. 3.*

Sidney L. Wolfson
Charles C. Sorgen

INVENTORS
BY *[Signature]*
ATTORNEY

Patented Oct. 22, 1929

1,732,784

UNITED STATES PATENT OFFICE

SIDNEY L. WOLFSON, OF MERIDEN, CONNECTICUT, AND CHARLES C. SCHOEN, OF DETROIT, MICHIGAN, ASSIGNORS TO THE CUNO ENGINEERING CORPORATION, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT

CIGAR LIGHTER

Application filed October 8, 1928. Serial No. 310,955.

This invention relates to the so-called wireless type of lighter which has stationary current supplying terminals and a removable or separately portable lighter unit.

One object is to provide a simple and yet efficient, durable and attractive form of device suitable for installation in automobiles.

In its preferred form the device includes a stationary tubular holder provided with suitable circuit terminals and contacts, which holder is adapted to be secured to an instrument board or other support, and a removable lighter unit having a projecting knob and adapted to be inserted into the holder and provided with a push button switch member. This lighter unit has in turn a readily replaceable heater unit including a resistance coil.

Fig. 1 is a longitudinal sectional view showing one form of the device on a somewhat enlarged scale, the switch being shown in the open circuit position.

Fig. 2 is a side view of the lighter unit removed from the holder.

Fig. 3 is a rear end view of the holder and lighter unit.

The tubular member 5 is preferably of metal and may be secured in any suitable manner to a support 6 which may be the instrument board.

The removable lighter unit includes a tubular sleeve 7 preferably formed of insulating material. The knob 8 may be conveniently screw threaded into the outer end of the tube 7. If this knob is of metal an insulating washer 9 may be interposed at the rear of the knob to prevent grounding.

The heater unit has a body of insulating material which may conveniently be formed of the parts 10 and 11, for instance of lava-ite or other heat resisting material to prevent transfer of heat to the other parts of the device. The incandescent member 12 is preferably in the form of a coil of resistance metal having its inner end connected to the central screw or tie rod 13. The nut 14 on the inner end of the screw 13 serves to hold the parts together and also serves as a contact. The outer body part 10 is provided with a contact ring 15 which is crimped or

spun in place and electrically engages the outer end of the coil 12. This body part 10 preferably has a flange which surrounds the coil 12 and serves to restrict radiation from the coil. This not only protects the surrounding parts when the lighter unit is in the holder but also prevents the coil from cooling off too soon when the lighter unit is being used.

The other body part 11 is provided with a sleeve 16 which may be provided with a screw thread so that it can be screwed into the end of the tube 7. A flange of this sleeve 16 at the end of the body member 11 serves as a contact of the switch whose movable spring member 18 is adapted to bridge from the contact nut 14 to the flange 17.

This movable switch member 18 is carried by a plunger 19 which is supported in the knob 8 and provided with a push button 20 and a spring 21 for holding the switch member normally in open circuit position.

The tubular holder 5 serves as one terminal of an electric circuit and may be grounded in any suitable manner. The sleeve 16 may contact with this tube 5 as shown at the upper part of Fig. 1 but I prefer to provide in addition a spring contact finger 22 to ensure a perfect contact from the tube 5 to the sleeve 16 and its flange 17. The other side of the circuit is suitably connected to a spring contact finger 23 supported by an insulating bar 24 at the rear of the tubular holder. The front end of this spring 23 engages the contact ring 15 when the parts are in the position shown in Fig. 1. A dowel pin 25 or other interlocking member may be provided to prevent relative rotation between the body parts 10 and 11.

Normally the parts are in the position shown in Fig. 1 which is the open circuit condition. To heat the incandescent resistance member 12 it is simply necessary to push in on the button 20 until the spring 18 connects the flange 17 to the nut 14. The circuit may then be traced from the battery or other power source to the tube 5, spring 22, sleeve 16, flange 17, switch member 18, nut 14, screw 13, heater coil 12, flanged ring 15, spring finger 23 and back to the power source.

As soon as the coil has reached the proper degree of incandescence the lighter unit may be pulled out and used. Obviously, it will not be necessary to continue to press on the button 20 and yet when the pressure on the button is removed the spring 21 automatically moves the switch member 18 away from the heater contacts so that when the unit is again inserted into the holder 5 the circuit is not closed although the contact fingers 22 and 23 are automatically engaged respectively by the sleeve 16 and ring 15.

In case the coil 12 should be burned out or the body member 10 broken the heater unit may be readily removed by simply unscrewing it from the tube 7 and replacing it with a new unit.

It will be noted that the plug or insertable and removable lighter member is made largely of material which does not conduct electricity and is a poor conductor of heat and that the manually operated parts are not in the electrical circuit.

We have endeavored to confine, as much as possible, the heat generated to the operative portion of the lighter making it more efficient and practical in use.

The parts are so constructed that the lighter unit is held in place frictionally without catches or other parts which might get out of order or retard its free insertion or removal.

It will also be noted that the lighter unit may be inserted in any rotative position relative to the holder. Although we have shown the device as mounted horizontally, it is obvious that it might be mounted vertically or at an angle. On account of the shape and arrangement of the knob and push button it is possible to arrange the device so that it is practically invisible or in some out of the way place and the device can be operated without looking at it. The only parts which are normally visible when the device is not in use are the knob and push button which may be made ornamental and of a design to harmonize with the instrument board fittings, etc.

We claim:

1. A cigar lighter including a tubular holder having spring contacts near one end, a removable lighter unit insertible into said holder, and including an insulating sleeve having a knob at its outer end, and a heater unit detachably secured in the inner end, said heater unit including a heat resisting body having a coil at one end and a switch contact at the other end, a ring contact carried by the body and connected to the outer end of the coil and adapted to engage one of said spring contacts, a shell carried by said body and adapted to engage the other spring contact, a center contact at the inner end of said body connected to the center of said coil and a spring pressed push button

in said knob having a movable switch member at its inner end adapted to connect said shell and said center contact.

2. A cigar lighter including a tubular holder in an instrument board and having contacts behind the board, a removable lighter unit insertible into the front end of said holder and including an insulating sleeve having a knob at its outer end, and a heater unit detachably secured in the inner end, said heater unit including a heat resisting body having a recess with a coil at one end and a switch contact screw extending to the other end, a ring contact carried by the body and connected to the outer end of the coil and adapted to engage one of said contacts, and means including a spring pressed push button in said knob having a movable switch member at its inner end adapted to complete the circuit to said center contact.

3. A removable unit for a cigar lighter comprising, a sleeve having a knob containing a push button at one end, and a removable heater unit secured in the other end, said heater unit having an insulating body with a resistance element at its outer end and a contact ring fast on the body and connected to one end of the resistance element, a center contact at the opposite end of the body connected to the other end of the resistance element and a contact shell on the body having a peripheral contact ring and an end flange, said push button having a movable switch member adapted to connect the center contact and said flange.

4. A cigar lighter including an insulating sleeve, a knob secured to the outer end thereof, a push button switch member in said sleeve and a detachable igniter unit having a screw threaded connection with the other end of said sleeve, said unit including an insulating body, a resistance element secured to the rear end of said body, two circuit terminals carried by said body, one of said terminals being connected to one end of the resistance element, a switch contact connected to the other end of said element and a switch contact connected to the other terminal.

5. A replaceable heater unit for cigar lighters comprising two insulating bodies, a central tie rod having a contact at the rear end and a resistance coil in a recess at the other end and having one end secured to the opposite end of said rod, a flanged contact ring secured on one body and connected to the other end of the coil, and a screw shell secured on the other body and having a contact ring at one end and a contact flange at the other end.

6. A cigar lighter comprising a tubular housing open at the front, means for supporting said housing at its front end, two spaced-apart, stationary contacts carried by the rear

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end of the housing one contact being arranged with its action surface in front of the other, a lighter member adapted to be inserted into said housing from the front and consisting of a tubular body, a knob secured to the front end of the body, an insulating base carried by the rear of the body, a heater wire mounted in the rear of said base, two contact rings carried by said base, spaced apart from each other and adapted to engage respectively the stationary contacts of the housing when the lighter member is inserted in the housing, a double-break spring-pressed switch member mounted in the tubular body and having a push button extending through the knob, one of said rings being connected to one end of said heater wire and switch contacts connected respectively to the other end of the heater wire and to the other ring, and adapted to be bridged by said switch member when said push button is operated.

7. A cigar lighter comprising a tubular housing open at both ends, means for supporting said housing at its front end, two spaced-apart spring contacts carried by the rear end of the housing, a lighter member adapted to be inserted into said housing from the front and consisting of a tubular body, a knob secured to the front end of the body, an insulating base carried by the rear of the body, a heater wire mounted in the rear of said base, two contacts carried by said base, spaced apart from each other longitudinally of the base, the rear base contact being of smaller diameter than the other base contact and adapted to engage respectively the spring contacts of the housing when the lighter member is inserted in the housing, a resilient switch plunger member mounted in the tubular body and having a push button extending through the knob, one of said base contacts being connected to one end of said heater wire and switch contacts connected respectively to the other end of the heater wire and to the other base contact and adapted to be bridged by said resilient switch member when said push button is operated.

8. A cigar lighter comprising a tubular metal housing open at the front, means for supporting said housing at its front end, two spaced-apart spring contacts carried by the rear end of the housing one of said contacts being insulated from the housing, a lighter member adapted to be inserted into and removed from said housing from the front and consisting of a tubular insulating body, a knob secured to the front end of the body, a heat resisting insulating base carried by the rear of the body, a heater wire carried by said base, two contact rings carried by said base, spaced apart from each other one in front of the other and adapted to engage respectively the spring contacts of the housing when the lighter member is inserted in the housing, the insulating base being of larger diameter

than the rear ring, one of the said rings being connected to one end of said heater wire and means for connecting the other end of the heater wire to the other ring.

9. A cigar lighter comprising a stationary tubular housing open at the front, means for supporting said housing near its front end, two spaced-apart spring contacts carried at opposite sides of the rear end of the housing and pressing inwardly toward each other, a lighter member adapted to be inserted into and removed from said housing from the front between said contacts and consisting of a body, a knob secured to the front end of the body, a heat-resisting insulating base carried by the rear of the body, a high-resistance heater wire secured to the rear of said base, two contacts carried by said base spaced apart from each other and adapted to engage respectively the spring contacts of the housing when the lighter member is inserted in the housing, one of said base contacts being connected to one end of said heater wire, and means for connecting the other end of the heater wire to the other base contact.

10. A cigar lighter comprising a tubular housing open at the front, means for supporting said housing near its open end, two spaced-apart spring contacts carried by the rear end of the housing, a lighter member adapted to be inserted into and removed from said housing from the front and rotatable therein and consisting of an insulating body, a knob secured to the front end of the body, a heat resisting base carried by the rear of the body, a heater wire carried by said base, two contact rings carried by said base, spaced apart from each other with a groove between them and adapted to engage respectively the spring contacts of the housing when the lighter member is inserted in the housing, the base being of larger diameter than the rear ring, one of said rings being connected to one end of said heater wire and a spring pressed switch member for connecting the other end of the heater wire to the other ring.

11. A cigar lighter comprising a tubular housing open at both ends, means for supporting said housing, two spaced-apart contacts carried by said housing, a lighter member adapted to be readily inserted into and removed from said housing from the front and consisting of an insulating body, a knob secured to the front end of the body, an insulating base carried by the rear of the body, a heater wire carried by the rear of said base, two contacts carried by said base, spaced apart from each other and adapted to engage respectively the spring contacts of the housing when the lighter member is inserted in the housing, a spring pressed switch plunger member mounted in said body and having a push button extending through the knob, one of said base contacts being con-

5 nected to one end of said heater wire and switch contacts connected respectively to the other end of the heater wire and to the other base contact and adapted to be bridged by said switch member when said push button is operated.

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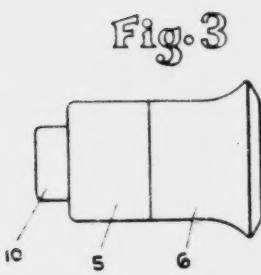
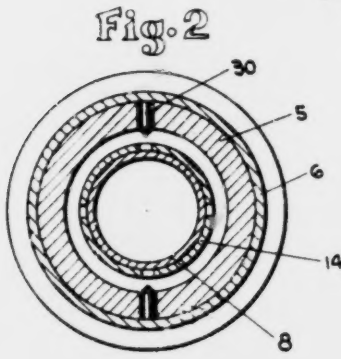
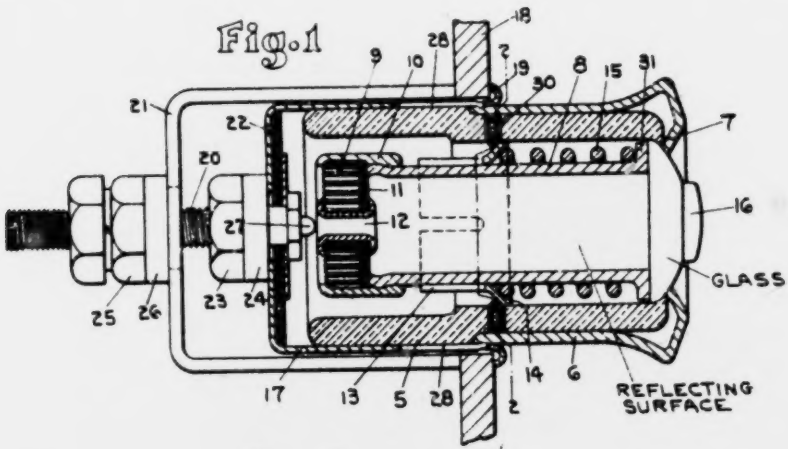
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May 6, 1930.

C. B. MAHAN
ELECTRIC CIGAR LIGHTER
Filed June 6, 1929

1,757,255



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ELECTRIC CIGAR LIGHTER

Application filed June 6, 1929. Serial No. 368,894.

This invention relates to an electric lighter, or igniting device, such as is used by smokers, and particularly to a lighter of the so called "wireless" type. Lighters of this type are commonly used in motor vehicles, and comprise a stationary member, or support, and a removable member provided with a resistance wire or heating element, and normally supported by the stationary member, but removable therefrom, for use, after the heating element has been heated by electric current.

One object of the present invention is to produce a lighter, of the type in question, which is so constructed that it may be used conveniently for lighting a pipe, as well as a cigar or a cigarette. To this end, the invention comprises a heating element which is normally surrounded and guarded by a part of the removable member, but which may be caused to protrude therefrom for use in lighting a pipe.

Another object of the invention is to provide simple and convenient means for closing the circuit through which the heating element is energized, such means being so arranged that they are not liable to accidental operation, and that accidental contact of the person with the heating element is impossible during the heating operation. To this end, the invention comprises an arrangement in which the heating element is located at the rear end of the removable member, and is supported by a plunger which is slidable within the body of the removable member, to permit the necessary engagement of the contacts without movement of the entire removable member.

Other objects of the invention, and the features of construction by which they are attained, will be set forth hereinafter, in connection with the description of the illustrated embodiment of the invention.

In the accompanying drawings, Fig. 1 is a longitudinal sectional view of a lighter embodying the present invention, shown in position upon a member such as the instrument board of a motor vehicle, and on an enlarged scale; Fig. 2 is a section on the line 2—2 in Fig. 1, looking from left to right; and Fig. 3 is a side elevation of the removable member

of the lighter, shown in actual size, with the heating element in the protruded position occupied when the lighter is used to light a pipe.

In the illustrated embodiment of the invention the removable member comprises a body 5, which is preferably moulded from some material, such as synthetic resin, which is a good insulator both of electricity and of heat. The forward portion of this body is covered by a metal sleeve 6, which is formed to provide a projecting rim, to facilitate manipulation of the device, and a flange partially covering the forward end of the body. The body is formed with a passage extending from end to end, but at the forward end this passage is contracted to form a ledge or shoulder 7.

Within the passage in the body, a plunger 8 is mounted, this plunger having the form of a tube open at both ends. The heating element 9, which has the usual form of a spiral of resistance metal, is supported at the rear end of the plunger. For this purpose it is embraced by metal cap 10, which is fixed on the plunger. A disc 11, of mica or other translucent insulating material, serves as a support for the heating element and for a central terminal, in the form of a hollow rivet 12, by which the central end of the heating element is fixed.

The plunger is guided in the body by means of a sleeve 13, which fits closely about it and is slotted, as shown in Figs. 1 and 2, so that it may be formed to spring inwardly and thus maintain firm frictional and electrical engagement with the plunger. The sleeve 13 has an outwardly-extending inclined flange 14, fitting closely within the body and serving to center the sleeve. Two pins 30, with beveled inner ends, are mounted in radial perforations in the body 5, and they are engaged, at their inner ends, by the flange 14. The plunger also is provided with a flange 31, at its forward end, and a spring 15, coiled about the plunger, is interposed between the two flanges. This spring has a tendency to press the flange 14 against the pins 30, which serve as abutments to retain the sleeve 13 in place, and it also acts to move the plunger

forwardly in the body, so as to hold the heating element normally retracted, within the rear end of the body, as shown in Fig. 1. Between the forward end of the plunger and the shoulder 7, a lens or disc 16, of glass or other translucent material, is interposed, this lens being of such diameter that it may be moved freely within the passage through the body, but being normally held against the shoulder 7 by the pressure of the plunger.

The pins 30 are mounted loosely in their perforations, so that the pressure of the beveled flange 14 against their ends tends to slide them outwardly, and this maintains them always in firm engagement with the sleeve 6. This mode of operation is desirable for the reason that the pins and the sleeve constitute parts of the electric circuit of the device, as hereinafter explained.

The stationary member of the lighter comprises a socket 17, drawn from sheet metal and adapted to and introduced into a suitable perforation in a panel or board 18, such as the instrument board of a motor vehicle.

A flange 19 is provided at the forward end of the socket, to rest against the board 18 as shown. The socket is held in place by means of a bolt 20 and a yoke 21, the bolt being fixed to the bottom or rear end of the socket and passing through the yoke so that, upon the tightening of a nut 25, the yoke is pressed against the rear of the board 18, thus drawing the socket firmly into position. Since it is convenient, also, to use the bolt 20 as an insulated terminal of the lighter, the head of the bolt, and the nut 23 by which it is fixed to the socket, are insulated therefrom by washers 22 and 24 of insulating material, and the nut 25 is also insulated from the yoke 21, by means of an insulating washer 26.

The inner end of the bolt cooperates, as a contact member or terminal, with the hollow rivet 12 which constitutes one terminal of the heating element 9. These parts are normally out of engagement with each other, as shown in Fig. 1. When the lighter is to be used, however, the user presses his finger against the lens 16, in the same manner that an ordinary electric button switch is used. The lens and the plunger are thus forced rearwardly within the body 5, causing the rivet 12 to press against the bolt 20. It will be understood that this bolt will be connected within a suitable source of current, in the usual manner, and upon the engagement of the terminals, as just described, the current will flow from the bolt through the rivet to the inner end of the heating element, from which it passes, through the cap 10, the plunger, the sleeve 13 and the pins 30, to the sleeve 6. The sleeve 6 is in engagement with the inner surface of the socket 17 which, in turn, is in electrical engagement with the metal plate 18. If this plate constitutes a portion of the electrically grounded metallic structure of the ve-

hicle, it will afford a return conductor for the completion of the circuit. The socket may, however, be grounded in any other manner. The heating element is energized by the circuit described, and when it has attained a sufficiently high temperature the removable member may be withdrawn from the stationary member, and used or passed about in the usual manner of such devices.

When the lighter is to be used for a cigar or a cigarette the plunger is permitted to remain in the position shown in Fig. 1, with respect to the body 5, so that the heating element remains retracted within the rear end of the body, where it is guarded against accidental contact with the person of the user. If a pipe is to be lighted, however, the user, while holding the removable member in one hand, may press against the lens with a finger of that hand, and thus move the plunger to its extreme rearward position, with the result of causing the cap 10 and the heating element to be protruded from the body, as shown in Fig. 3, to an extent sufficient to permit its introduction into the bowl of the pipe.

To insure an electrical contact between the sleeve 6 and the socket 17, and also to provide frictional means for retaining the removable member in place, the socket member is slotted at two or more points, so as to provide tongues 28, as shown in Fig. 1, which may be formed to spring inwardly against the sleeve. These tongues are shown as having slight inward projections, at their forward or free ends, engaging a corresponding recess or recesses in the sleeve.

The heating element is not directly visible when being heated, but the open passage through the plunger, together with the translucent materials in the disc 11 and the lens 16, permit the glow from the incandescent heating element to be visible at the front of the lighter, so that the user may know how long it is necessary to hold the circuit closed. This arrangement is not, broadly speaking, novel, since it has heretofore been proposed to provide the body of such an electric lighter with an opening through which a rearwardly located heating element is visible. A feature of the present invention, however, resides in the use of a reflecting surface within the light-conducting opening or passage, such surface being provided by polishing the interior of the hollow metal plunger. This surface will reflect light rays to the lens at such angles that they may be visible through a wide angle in front of the lens, whereas in lighters not provided with such reflecting surface, the comparatively faint glow of the heating element cannot be clearly perceived unless the eye is directly in line with the passage through which the light is conducted.

In a lighter of the inverted type, that is, in which the heating element is mounted at the rear end of the removable member, and its

supporting post or rivet is used as one of the circuit closing contacts, imperfect contact is likely to result after the device has been used for a short time, owing to the collection of metal oxide and charred tobacco upon this support or terminal. In the present construction the supporting terminal in question is the hollow rivet 12, and to cooperate with this member the bolt 21 is provided with a short rounded projection 27, adapted to enter the hollow in the rivet in consequence of the circuit-closing movement. This arrangement affords a slightly sliding engagement between the parts 12 and 27, which is adapted to dislodge any foreign matter which might otherwise prevent conductive contact between the metal surfaces.

It will be apparent that the several objects of the invention are attained in a very simple construction, particularly by reason of the fact that the mounting of the heating element upon a plunger, slidable within the body of the removable member, provides not only for the protrusion which is necessary in lighting a pipe, but also for the necessary movement to cause circuit-closing engagement of the contact members.

The invention claimed is:

1. In an electric cigar lighter of the wireless type, a removable member comprising a heating element, a body having, at one end, a recess in which the heating element is normally housed and guarded, and means, accessible for finger pressure at the opposite end of the body, for protruding the heating element from the body to facilitate the lighting of a pipe.

2. A removable member for a wireless cigar lighter, as set forth in claim 1, provided with a spring for retracting the heating element into the body.

3. In an electric cigar lighter of the wireless type, a removable member comprising a heating element, a body having a passage extending from front to rear, and means, extending through said passage, supporting the heating element at the rear end of the body and accessible for finger pressure at the front of the body, said means comprising a hollow plunger, through which light from the heating element is visible from the front, the plunger being slidable in said passage to cause protrusion of the heating element from the body.

4. A removable member, for a wireless cigar lighter, as set forth in claim 3, comprising, further, a button of translucent material seated normally at the forward end of the body and closing the end of the passage therein, said button being movable, by finger pressure, to move the hollow plunger for the purpose set forth.

5. In an electric cigar lighter of the wireless type, a removable member comprising a spiral heating element with a central termi-

nal, a disc of translucent material at the middle of which said terminal is fixed, a tubular plunger, a body having a passage there-through in which the plunger is slidably mounted, and a helical spring interposed between the body and the plunger and arranged to move the plunger in a direction to retract the heating element within the end of the body.

6. In an electric cigar lighter of the wireless type, the combination, with a stationary member provided with a fixed terminal and with means for supporting and frictionally retaining a removable member, of a removable member comprising a heating element provided with a terminal, a body having a recess, at its rear end, in which the heating element is housed, means, supporting the heating element, slidable in the body and exposed for finger pressure at the forward end thereof, by which the heating element may be moved rearwardly, independently of the body, to cause engagement of said terminals, and a spring, in one of said members, for holding the terminals normally disengaged.

7. In an electric cigar lighter of the wireless type, the combination of a stationary member provided with a central terminal in the form of a pin, and a removable member provided, at its rear end, with a helical heating element, the inner end of the heating element being fixed to a terminal in the form of a tube adapted to receive the first-mentioned terminal with a sliding engagement.

8. A removable member, for a wireless electric cigar lighter, comprising a body, of insulating material, provided with a longitudinal passage, a metal plunger slidable in said passage, a heating element mounted on the rear end of the plunger and provided with an insulated terminal, a metal band on the outer surface of the body, and electrical connecting means, between the plunger and said band, having a resilient sliding engagement with the plunger.

9. A removable member for a wireless electric cigar lighter, as set forth in claim 8, in which said connecting means comprise a slotted sleeve concentric with and embracing the plunger.

10. A removable member, for a wireless electric cigar lighter, comprising a body, of insulating material, provided with a longitudinal passage, a metal plunger slidable in said passage, a heating element mounted on the rear end of the plunger and provided with an insulated terminal, a metal band on the outer surface of the body, conductive pins extending from said band to the interior of said passage, a resilient split sleeve embracing the plunger and having an inclined surface seated against the inner ends of said pins, and a spring interposed between the plunger and said sleeve and acting both to press the sleeve against the pins and to move

the plunger in a direction to retract the heating element within said passage in the body.

11. A removable member, for a wireless cigar lighter, comprising a body having a central passage and a shoulder at the forward end thereof, a hollow plunger slidable in said passage, a heating element carried on the rear end of the plunger, a lens loosely mounted, in said passage between said shoulder and the forward end of the plunger, and a spring coiled around the plunger and acting to move it forwardly so as to press the lens normally against the shoulder, the spring yielding to finger pressure, against the lens, whereby the plunger is moved rearwardly to protrude the heating element from the body.

12. A removable member, for a wireless cigar lighter, comprising a metal plunger, a heating element carried at one end thereof, a body, of heat-insulating material, with a longitudinal passage therethrough in which said plunger is slidably mounted, a metal sleeve on the outer surface of said body, an annular metal member loosely interposed between the plunger and the body and acting as a guide for the plunger, pins engaging the sleeve and extending into the passage in the body, said pins serving as abutments to support said annular member, and a spring coiled about the plunger and cooperating therewith at one end, the other end of the spring being seated against the annular member and acting to hold it in engagement with the pins.

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Dec. 29, 1931.

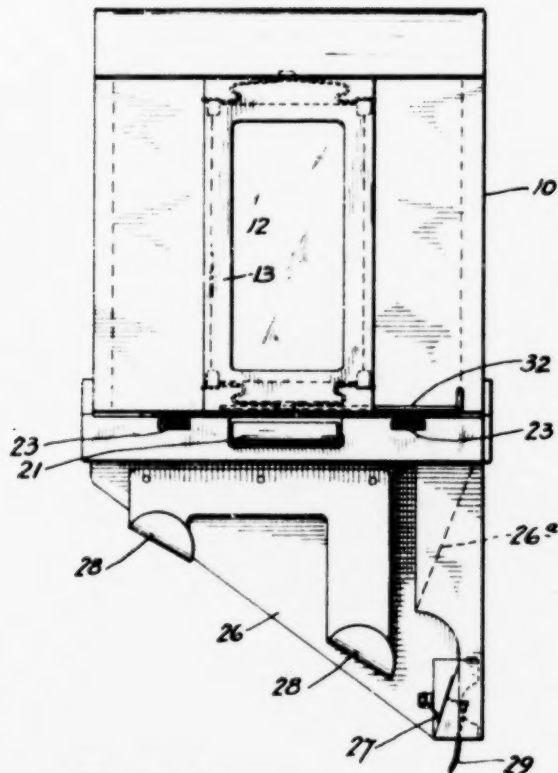
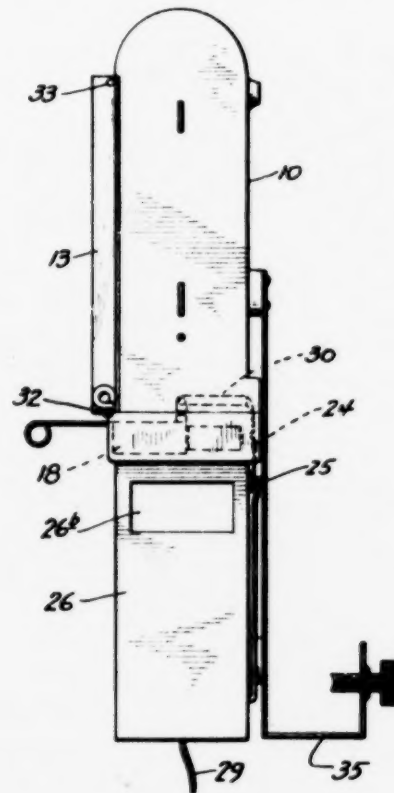
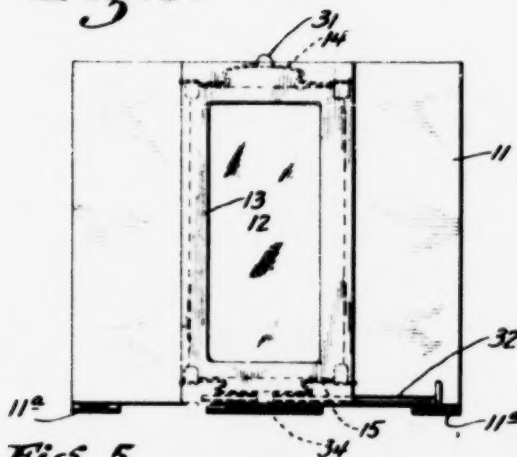
F. C. COPELAND

1,838,363

DISPENSING AND LIGHTING DEVICE

Filed March 9, 1927

2 Sheets-Sheet 1

Fig. 1.*Fig. 2.**Fig. 3.**Fig. 4.**Fig. 5.*FRANCIS C. COPELAND
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Dec. 29, 1931.

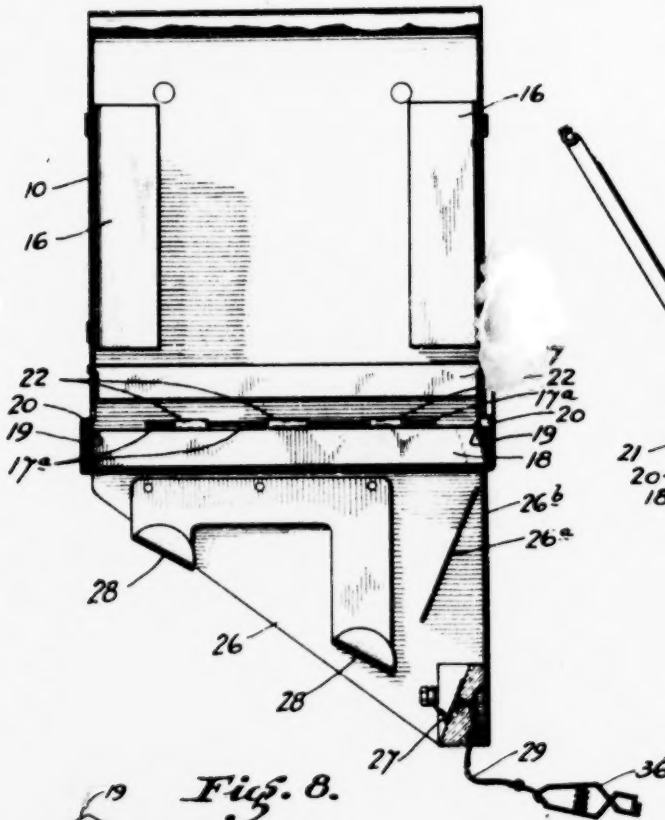
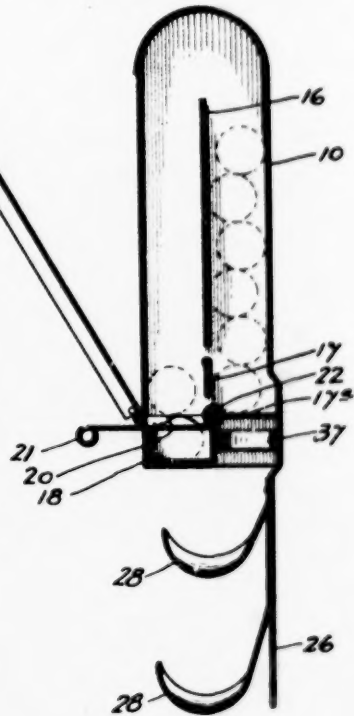
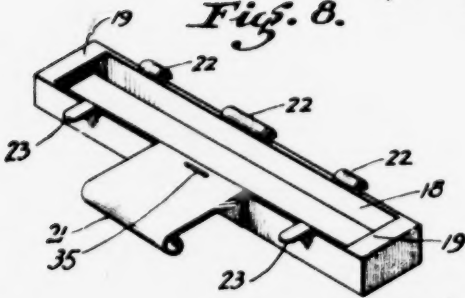
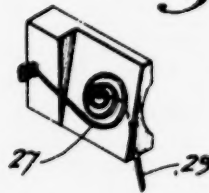
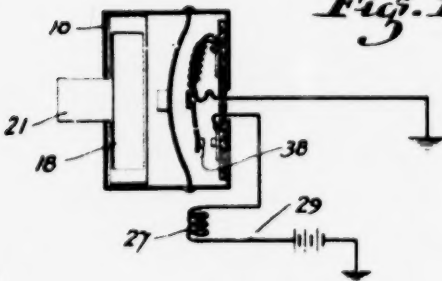
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DISPENSING AND LIGHTING DEVICE

Filed March 9, 1927

2 Sheets-Sheet 2

Fig. 6.*Fig. 7.**Fig. 8.**Fig. 9.**Fig. 10.*FRANCIS C. COPELAND
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DISPENSING AND LIGHTING DEVICE

Application filed March 9, 1927. Serial No. 173,933.

This invention relates to dispensing and lighting devices for cigarettes, cigars, and the like.

In a prior application filed by me November 12, 1923, Serial Number 674,381, entitled "Cigarette delivery and lighting device", I show and describe a dispensing and lighting device of this general character, wherein, by a single movement of a single lever, a cigarette can be delivered from a holder and brought into contact with an electric resistance element, and lighted.

The object of the present invention is to simplify and improve the construction and operation of a device of this character.

Among the more important improvements of the present invention is the delivery of the cigarette in inclined position to the electric resistance element. This insures that the cigarette, through the action of gravity, will force itself against the electric element with sufficient pressure to bring about lighting thereof without applying mechanical pressure to the opposite end. Moreover, in this inclined position the cigarette lights more readily than if it be held in horizontal position. Thus I am enabled to eliminate mechanical suction or draft means.

A further improvement resides in the dispensing mechanism. In said prior application I used a rotating cylinder for dispensing the cigarette, and this was liable to jam and also to tear the cigarette. In the present device I use a slidable dispensing element, movable into dispensing position by a thrust on the part of the operator; and this dispensing element is so arranged that when in dispensing position it forms a ground contact with the electric circuit, and thus causes the electric resistance element to be ignited.

Provision is made to prevent jamming of the dispenser or tearing of the cigarettes. I have also provided novel means to lock the dispensing element against movement, so as to prevent theft of the contents of the holder.

One form which my invention may assume is exemplified in the following description and illustrated in the accompanying drawings, in which

Fig. 1 shows a front elevation of the device;

Fig. 2 shows an end elevation of the same;

Fig. 3 shows a front view of the hinged door separated from the rest of the holder;

Fig. 4 shows a vertical sectional view of said door, taken through the glass panel thereof;

Fig. 5 shows a plan section of the same;

Fig. 6 shows a vertical longitudinal sectional view of the device;

Fig. 7 shows a vertical cross-section of the same;

Fig. 8 shows a perspective view of the dispensing element;

Fig. 9 shows a perspective view of the electric resistance element;

Fig. 10 shows a diagram of the electrical connections.

The present device comprises a box-like holder 10 having a front wall 11 hinged at its lower edge, as indicated at 11^a. This front wall is fitted with a glass panel 12 carried in a rectangular frame 13. There is a leaf spring 14 at the top and a similar spring 15 at the bottom of the frame 13, which springs press upon the edges of the glass to form a cushion support therefor, and in addition control the locking means hereinafter to be described.

The holder as shown has a depth equal to two tiers of cigarettes or cigars, and these tiers are preferably kept separated by division plates 16. Near the bottom of the holder is a swinging gate 17 which permits the articles to pass from the back tier to the front, one at a time, when the front tier is depleted. The bottom of the box is open at its rear half and closed at its front half. Spaced above the opening in the bottom are projections 17^a which support the back tier of cigarettes. Slidably mounted in the bottom of the box is a rectangular frame 18 of a size to receive a single cigar or cigarette. This frame is open both at its top and bottom, and has flanges 19 at its ends, upon which spring leaves 20 arranged within the holder are adapted to seat and hold the frame 18 compressed when the said frame is in retracted position. Projecting out through

the front wall of the holder is a handle 21 by means of which the dispensing element can be moved back and forth within the holder. The frame 18 has curved lips 22 on the top of its rear wall, extending up between the projections 17^a, to keep the cigarettes out of contact with the sharp edges and to assist in pulling a cigarette forwardly from the back tier to the front. This frame, when moved inwardly, will carry with it a single cigar or cigarette, and will register with the open portion of the bottom and discharge the cigar or cigarette contained therein. When in this extended position, the handle 21 will prevent the cigars or cigarettes in the front tier from dropping downwardly. I also provide the front wall of this frame with lugs 23 to assist in preventing the cigarettes or cigars in the front tier from dropping down when the frame is extended.

When in its extended position, registering with the open portion of the holder, the dispensing element at its back wall will make contact with a conductor bar 24, which bar is supported by a screw 25 secured to an apron 26 which extends downwardly from the holder. This bar 24 is electrically connected to a suitable resistance element 27 arranged on one end of the apron 26. This apron is preferably open at its front and bottom, and has secured to it a pair of curved arms 28 which serve as a cradle to support a cigar or cigarette in inclined position with one end abutting against the resistance element. The angle at which these arms support a cigarette or cigar is sufficiently steep to insure that the cigarette will move by gravity into close enough contact with the lighting element to insure lighting. The inclined position of the cigarette also tends to create a natural draft which makes it possible to effect a lighting thereof without applying suction to the opposite end of the cigarette. Arranged on the apron is a guide plate 26^a to prevent the cigarette from lodging on top of the element 27. An opening 26^b is preferably formed in the apron, which in conjunction with the plate 26^a will form a flue communicating with the lighted end of the cigarette.

The resistance element is connected to a suitable source of current, the circuit of which is closed by the pressure of the frame 18 against the bar 24. Preferably, I make use of a grounded circuit, and I therefore show a single wire 29, leading from a battery to the resistance element. The holder itself being grounded, the circuit will be closed when the element 18 comes in contact with the conductor bar 24. This bar 24 may also be extended above the dispensing frame 18, as indicated at 30, and contact can then be made between the frame and extension 30 when the said frame 18 is retracted by pressing downwardly on the handle 21, and tilt-

ing the frame upwardly against the pressure of the springs 20. This permits the igniter to be used without the dispenser.

These devices, while intended for use in many different situations, are frequently applied to the dash of an automobile. For that purpose I show a clamping bracket 35, and I also preferably provide a clip spring 36 on the end of the wire or cable 29, to facilitate hooking it up with the ignition system of the engine. Thus, to apply the device to a motor vehicle, all that is required is to bore a hole through the dash to permit the wire to pass therethrough, after which it can readily be connected to one of the ignition wires by means of the clip spring 36.

There should preferably be a spring 37 in the bottom of the container, tending to force the slidable element 18 forwardly, so that the electrical contact will be broken the instant the hand is removed from the handle 21. However, as indicated in Fig. 10, I may provide a switch 38 in the circuit, arranged to be closed by the employment of the slidable dispensing element 18, said switch adapted to be opened by a thermostat when a pre-determined temperature is reached. This would obviate the necessity of the operator's holding the slidable dispensing element in rearward position during the time the cigarette is being lighted.

On the return stroke of the slidable dispensing element, if the front tier of the container still contains any cigarettes, the swinging gate 17 will not open, and hence the cigarettes in the rear tier will be undisturbed. However, if this front tier or compartment be empty, then the curved lips 22 will engage between the bottom cigarette in the rear tier, and pull it forwardly beneath the swinging gate to the front tier, where it will drop into the frame 18, ready to be dispensed on the next movement.

The locking mechanism is simple, and consists of means for locking the hinged front wall and also for locking the dispensing element against operation. The top spring 14 carries a lip 31 which extends upwardly behind the top wall of the box. It is retracted by inserting a rod or pin such as is indicated at 32, through an opening 33 in the edge of the frame 13, whereby to depress the spring.

A similar locking means is provided for the dispensing element. The lower spring 15 carries a lip 34 which is adapted to extend down through an opening or slot 35 in the handle 21 of the frame 18. However, this lip is normally raised by keeping the spring 15 depressed, which is done by inserting a rod or pin 32 through an opening in the edge of the frame 13. This can be the same rod as is used for the top lock, and it will normally remain in place below, being withdrawn and carried away by the owner when it is desired to lock the dispensing element.

Various changes in the construction and arrangement of the several parts may be employed, without departing from the spirit of my invention as disclosed in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A cigarette dispensing and lighting device comprising a container to hold a supply of cigarettes, an ignition element, means to simultaneously drop a cigarette from said container and energize said ignition element, and means to catch said cigarette and guide the end thereof to rest by its own weight against said ignition element.

2. A cigarette dispensing and lighting device comprising a container, an ignition element, means to simultaneously drop a cigarette from said container and energize said ignition element, and inclined means to catch said cigarette and guide the end thereof to rest by its own weight against said ignition element.

3. In a device for dispensing and lighting cigarettes or the like, means to hold a supply of cigarettes, means to deliver the cigarettes one at a time therefrom, an igniting element, and means to receive and support the cigarette in vertically inclined position with lower end contacting with the igniting element.

4. In a cigarette dispensing and lighting device, a container for a supply of cigarettes, dispensing means slidably mounted at the bottom of said container to drop cigarettes, one at a time, from said container, spring-actuated means to lock said dispensing means and a rod removably inserted beneath said spring-actuated means for maintaining the dispensing means in inoperative position.

5. In a cigarette dispensing and lighting device, a container for a supply of cigarettes, dispensing means slidably mounted at the bottom of said container to drop cigarettes, one at a time from said container, an igniting element, means to support each cigarette in inclined position with one end thereof against said igniting element, means operated by said dispensing means to actuate said igniting element.

6. In a cigarette dispensing and lighting device, a container for a supply of cigarettes, an igniting element, means to simultaneously drop a cigarette from said container and to operate said igniting element, means to support said cigarette with the end thereof against said igniting element, and a flue disposed above said igniting element.

7. In an apparatus for lighting cigarettes or the like, an igniting element, means to energize said element, means to support a cigarette or the like with one end thereof resting by gravity against said igniting ele-

ment, and means to create a natural draft around said end of the cigarette.

8. In a cigarette dispensing and lighting device, a container for a supply of cigarettes, a dispensing means to drop one cigarette at a time from said container, an igniting element, means operated by said dispensing means to energize said igniting element, and a plurality of hooks, inclined from and in line with said ignition element, to receive a cigarette dropped from said container and guide the end thereof against said igniting element.

9. A cigarette dispensing and lighting machine comprising a container to hold a supply of cigarettes, an ignition element, means to simultaneously drop a cigarette from said container and excite said ignition element, and means to catch said cigarette and guide the end thereof to rest by its own weight against said ignition element.

10. A cigarette dispensing and lighting device comprising a container, an ignition element, means to simultaneously drop a cigarette from said container and excite said ignition element, means to catch said cigarette and guide the end thereof to rest by its own weight against said ignition element, and means to create a draft at the end of said cigarette.

11. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, a dispensing slide mounted at the bottom thereof and having an opening large enough to accommodate a cigarette, extending therethrough, means to close the bottom and open the top of the dispensing slide when the slide is in its normal outward position and to open the bottom and close the top when the slide is in its inward cigarette delivering position, an ignition element, and means to allow the cigarette to drop to an angular position, resting by its own weight thereon.

12. In a machine for dispensing and lighting cigarettes or the like, means to hold a supply of cigarettes, means to deliver the cigarettes one at a time therefrom, an igniting element, means to position the cigarettes with one end contacting with the igniting element, and means to cause a natural draft around the igniting element to light the cigarette.

13. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, dispensing means slidably mounted at the bottom of said container to drop cigarettes, one at a time, from said container, an ignition element, means to catch each cigarette and guide one end thereof against said ignition element where it rests by its own weight, means operated by said dispensing means to actuate said ignition element, and means to create a natural draft through said ignition element and across the end of a cigarette placed thereagainst.

14. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, an ignition element, means to simultaneously drop a cigarette from said container and to operate said ignition element, means to catch said cigarette as it drops and guide the end thereof against said ignition element, and a flue having a large opening at the bottom and a smaller opening at the top disposed above said ignition element to provide a natural current of air across said ignition element and up said flue when said ignition element is heated.

15. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, dispensing means slidably mounted at the bottom of said container to drop one cigarette at a time from said container, means to receive a cigarette as it is dropped from said container, a flue open at the top and bottom attached to the container and below one side thereof, an ignition element releasably attached to said flue adjacent the end of a cigarette in said receiving means, and means operated by said dispensing means to heat said ignition means and thereby produce a natural draft across said ignition element and up said flue.

16. In an apparatus for lighting cigarettes or the like, a cigarette dispensing means, an igniting element, means to energize said element, means to support a cigarette or the like with one end thereof resting by gravity against said igniting element, and means to create a natural draft around said end of the cigarette.

17. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, a dispensing means to drop one cigarette at a time from said container, an ignition element, means operated by said dispensing means to excite said ignition element, and a plurality of hooks, inclined from and in line with said ignition element, to receive a cigarette dropped from said container and guide the end thereof against said ignition element.

FRANCIS C. COPELAND.

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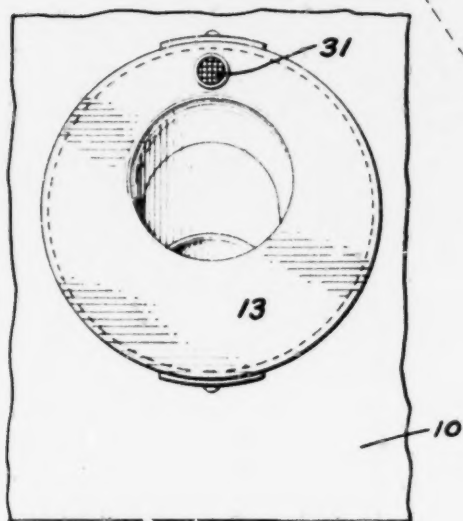
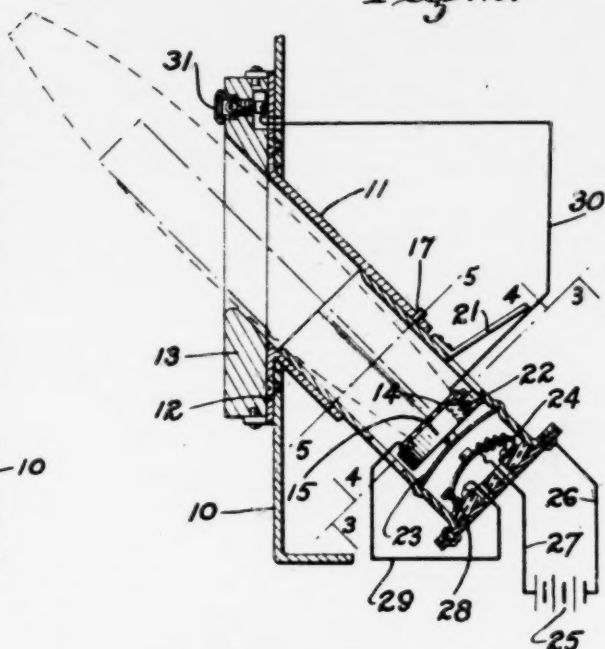
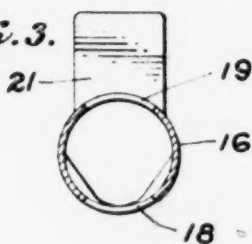
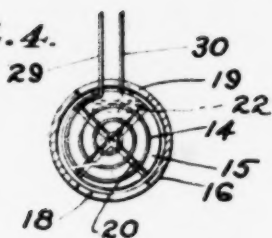
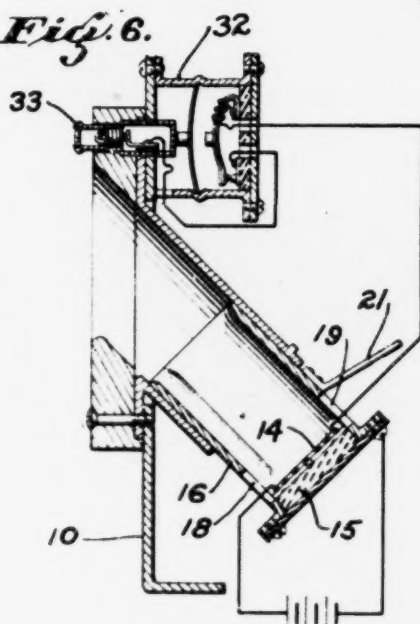
Feb. 9, 1932.

F. C. COPELAND

1,844,206

LIGHTER FOR CIGARS AND CIGARETTES

Filed April 18, 1927

Fig. 1.*Fig. 2.**Fig. 3.**Fig. 4.**Fig. 5.**Fig. 6.*INVENTOR.
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Louise & Loftis & Abbott
ATTORNEYS.

UNITED STATES PATENT OFFICE

FRANCIS C. COPELAND, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO ARCHIBALD W. DIACK, OF ANN ARBOR, MICHIGAN

LIGHTER FOR CIGARS AND CIGARETTES

Application filed April 18, 1927. Serial No. 194,571.

This invention relates to an electric lighter for cigars and cigarettes.

The principal object of the invention is to provide a simple form of lighter, comprising an electric igniting element adapted to be attached to a support such as the instrument board of an automobile, whereby cigars or cigarettes, when applied to the igniting element, will be lighted without the use of suction. This is brought about by causing the cigar or cigarette to occupy an inclined position, with the end to be lighted disposed downwardly, and arranging vent openings adjacent the igniting element, so that the air will get beneath the end of the cigar or cigarette and create a draft upwardly there-through.

When applied to an automobile, the igniting element may conveniently be connected to the source of current which supplies the ignition to the engine, and the air currents produced by the cooling fan and the travel of the vehicle will be helpful in inducing a draft through the cigar or cigarette. Provision is made for closing the circuit, either by pressing a switch button by hand or by a thrust of the cigarette or cigar against the igniting element, and the said circuit may be opened automatically after the lapse of the required time to light the cigar or cigarette, through a thermostatic device.

In a device such as forms the subject-matter of the present application, it is not necessary to hold the cigar or cigarette in the mouth, nor to bring the igniting element into contact therewith. All that is required is to simply thrust the cigar or cigarette into the inclined guide and against the igniting element, whereupon the hand may be removed and the cigar or cigarette left in place until it is properly lighted, at which time the current is automatically cut off and the cigar or cigarette is in lighted position, ready to be smoked.

In the accompanying drawings,

Fig. 1 shows a front elevation of a device embodying my invention;

Fig. 2 shows a vertical central transverse section of the same;

Fig. 3 shows a section taken on the line 3—3 of Fig. 2, looking outwardly;

Fig. 4 shows a sectional view on line 4—4 of Fig. 2, looking inwardly;

Fig. 5 shows a sectional view on the line 5—5 of Fig. 2;

Fig. 6 shows a vertical central sectional view of a modified arrangement of the circuit-controlling means.

A supporting wall is shown at 10, which may be considered as the instrument board of an automobile. A tubular guide 11, arranged at a downward angle on a flange 12, extends through an opening in the board and is secured in place by screws passing through the flange and board. The flange is preferably covered by an escutcheon plate 13.

The igniting element includes a suitable resistance wire 14, arranged spirally on a refractory base 15 and supported in the end of a tubular extension 16. This tubular extension fits telescopically into the guide member 11 and is held therein by a bayonet joint 17, so that the igniting element may be conveniently inserted or removed without disturbing the other parts of the device.

Adjacent the igniting element the tubular extension has a lower vent opening 18 and an upper vent opening 19, whereby a current of air may pass in close proximity with the end of the cigar or cigarette, to facilitate lighting. Lighting is further facilitated by forming the refractory base with grooves 20, whereby the air will circulate beneath the resistance wires, and hence beneath the end of the cigar or cigarette. Due to the angle of the guide member, the cigar or cigarette will occupy an inclined position, with the end to be lighted extending downwardly so that air passing the lighted end will tend to move upwardly through the tobacco, thus facilitating combustion and making it unnecessary to apply suction to the cigar or cigarette during the time it is being lighted. The force of this draft through the cigar or cigarette is considerably increased where the device is applied to an automobile, since in that case the cooling fan will throw a current of air rearwardly, and considerable movement of air will also result from the travel of the

vehicle. I prefer to position a deflector plate 21 adjacent the top opening 19, so as to attract the current of air onto the igniting element and beneath the end of the cigar or cigarette. With the ventilating openings 18 and 19 above and below the igniting element, a flue action will be present at all times. This will induce a current of air around the end of the cigar or cigarette and between the resistance element and its base, which will be sufficient to cause lighting without suction, even though the tubular member be in a horizontal position.

As shown in Fig. 2, the base of the igniting element is hinged at 22, and rests against a buckling spring 23. Pressure of the cigar or cigarette against the igniting element will control the buckling spring past center, where it will contact with a thermostatic bar 24. This bar forms a circuit closer for a one-line circuit. The source of current is indicated at 25, and is grounded at one side by a lead 26. On the other side of the current source is a lead 27, coiled around the thermostatic bar and in contact therewith. The other end of the bar is free, and when pressed upon by the buckling spring is adapted to move into contact with a contact plate 28, to which another lead 29 is connected. This lead 29 extends to the resistance wires or igniting element, and the other side of the resistance wires is connected with a lead 30 which is mounted onto the frame of the device. A little signal lamp 31 is cut into the lead 30 and arranged on the escutcheon plate to indicate the condition of the circuit.

The thermostatic bar is so arranged that after a lapse of time sufficient to supply the required temperature to the igniting element for lighting a cigar or cigarette, the bar will expand against the buckling spring and throw the latter back to initial position, thus leaving the circuit broken, where it will remain until a subsequent time when a cigarette or cigar is inserted.

In the modification shown in Fig. 6, the igniting element is stationarily mounted in the end of the tubular extension 16 and a thermostatic circuit control is arranged in a housing 32 adjacent the signal light. The buckling spring in this case is moved to position where the thermostatic bar closes the circuit by provision of a cage 33 which carries the signal light, said cage being slidably mounted in the escutcheon plate, and capable of endwise movement when pressure is applied thereto with the thumb or finger.

Various changes in the construction and arrangement of the several parts herein shown and described may be employed without departing from the spirit of my invention as disclosed in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A lighter for cigars and cigarettes, comprising a guide, an electric igniting element at the lower end thereof, manual means for closing a circuit through said igniting element, and thermostatic means for opening said circuit.

2. A lighter for cigars and cigarettes, comprising a guide, an electric igniting element at the lower end thereof, means actuated by movement of the igniting element under the thrust of a cigar or cigarette to close the circuit through said igniting element, and thermostatic means for opening the said circuit.

3. A lighter for cigars and cigarettes, adapted to be attached to the instrument board of an automobile, comprising a guide for the cigar or cigarette secured to the instrument board and extending through an opening therein and downwardly at an angle, said guide being of sufficient length to independently support a cigar or cigarette, an igniting element at the lower end of the guide with which the end of the cigar or cigarette contacts and rests by gravity thereon, and ventilating means at the lower end of the guide to expose the end of the cigar or cigarette to a current of air, whereby a draft will be created around the end of the cigar or cigarette to cause lighting thereof through natural draft.

4. A lighter for cigars and cigarettes comprising a socket of sufficient length and so positioned as to independently support the cigar or cigarette, an electric igniting element at the inner end of the socket and comprising a support of insulating material, and a resistance wire arranged on said support, and means to permit air to circulate upwardly through the inner end of the socket and between the wire and the support, whereby a cigar or cigarette may be lighted through a natural draft.

5. A lighter for cigars or cigarettes, comprising a socket of sufficient length so arranged as to independently support a cigar or cigarette, an electric igniting element at the inner end of the socket, normally inactive, and means engageable by the cigar or cigarette when in the socket, to activate the igniting element.

6. A lighter, comprising in combination a vertical support, a socket on said support, of sufficient length and so positioned as to receive and support a cigar or cigarette, said socket being formed of telescoping sections detachably connected together, and an electric igniting element arranged on the innermost section.

7. A lighter for cigars and cigarettes, comprising a socket of sufficient length and so positioned as to independently support a cigar or cigarette, an electric igniting element at the inner end thereof, comprising an insulating base, resistance wires arranged thereon, and grooves formed in said base be-

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neath the resistance wires, permitting circulation of air between the wires and base.

8. A lighter for cigars and cigarettes, adapted to be attached to the instrument board of an automobile, comprising a guide secured to the instrument board of sufficient length and so arranged as to independently support a cigar or cigarette, an igniting element at the inner end of the guide, ventilating means at the inner end of the guide to expose the end of the cigar or cigarette to a current of air, whereby a draft will be created around the end of the cigar or cigarette to cause lighting thereof through natural draft, means to control the circuit for activating the igniting element, and means on the instrument board to indicate when said element is activated.

FRANCIS C. COPELAND.

Jan. 30, 1934.

J. H. COHEN
CIGAR LIGHTER

1,944,925

Filed April 22, 1929

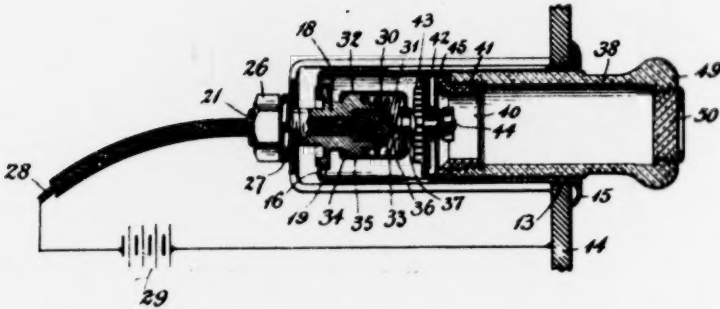


Fig. 1.

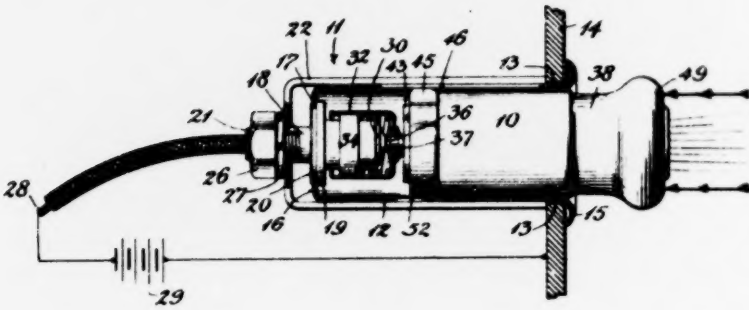


Fig. 2.

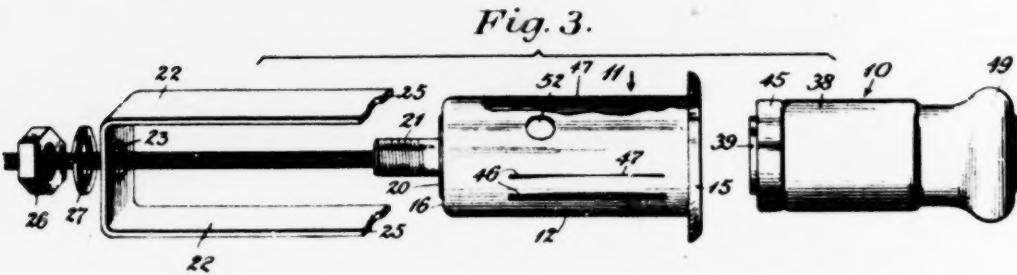


Fig. 3.

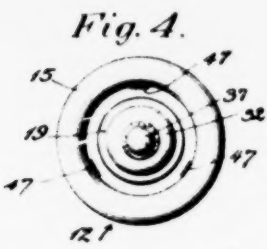


Fig. 4.



Fig. 5.

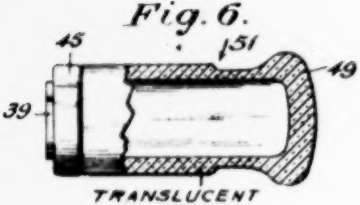


Fig. 6.

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Joseph H. Cohen,
BY *John G. Johnson*
ATTORNEY

Patented Jan. 30, 1934

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UNITED STATES PATENT OFFICE

1,944,925

CIGAR LIGHTER

Joseph H. Cohen, Bridgeport, Conn.

Application April 22, 1929. Serial No. 357,930

8 Claims. (Cl. 219—32)

This invention relates to electric cigar-lighters, and more particularly, to that type of cigar-lighter which comprises a holding device adapted to be supported on an instrument board or other suitable support, and an igniting unit adapted to be mounted on the holding device for quick and complete removal and replacement after a heating element carried by the igniting device has been brought to incandescence so that the heating element may be applied to the end of a cigar or cigarette to ignite the same.

An object of the present invention is to provide an improved cigar-lighter of the kind referred to, in which the holding device comprises a socket and the igniting device a plug to be inserted in and supported by the socket, and provides means for facilitating the mounting of the socket on the instrument board of a motor vehicle.

Another object of the invention is to provide an automatic switch in the socket adapted to close a circuit through the igniting unit when the igniting unit, which is supported in two-pole engagement with the holding device, is moved inwardly on the holding device.

A further object is to provide improved means on the holding device for resiliently holding the igniting unit on the holding device against accidental or unintentional removal.

And a still further object of this invention is to provide an improved igniting unit and heating element therefor.

Other features and advantages will herein-after appear.

In the accompanying drawing which illustrates one form of the invention, that at present preferred—

Figure 1 is a sectional view of the holding device and igniting unit mounted in position on a suitable support, such as the instrument board of a motor vehicle.

Fig. 2 is a view similar to Fig. 1, but showing the igniting unit in elevation, and showing the latter in the position which it occupies when a current-supply circuit through the heating element is closed.

Fig. 3 is a disassembled view of the igniting unit, the sleeve constituting the socket for it, and the plate and accompanying means for securing the socket to the instrument board.

Fig. 4 is a front elevation of the holding device with the igniting unit removed.

Fig. 5 is an elevation showing the end of the igniting unit which carries the heating element.

Fig. 6 is a sectional view of a modification of the igniting unit shown in Figs. 1 to 3.

The electric cigar-lighter of the present invention, as shown in the accompanying drawing, comprises an igniting unit 10 and a holding device 11, the former being mounted on the latter for quick removal and replacement. The holding device forms a socket for receiving the igniting unit which is cylindrical and constitutes a plug.

The holding device includes a sleeve 12 adapted to be inserted in a hole 13 in an instrument board 14 or the like and has an outwardly extending flange or bead 15 at its forward end adapted to engage the face of the instrument board at the margin of the hole 13 and limit the inward movement of the sleeve through the hole in the instrument board 14. At its inner end the sleeve 12 is provided with an end wall 16 having an aperture 17 in which a post-like member 18 is mounted. This post-like member 18 has a flange 19 engaging the inner side of the end wall 16 and another flange 20 engaging the outer surface of the end wall 16 and formed by peening over the material of the post adjacent the flange 19. The post 18 has a screw-threaded end portion 21 over which a clamping plate 22 is adapted to be placed after the sleeve 12 has been inserted in the hole in the instrument board, the clamping plate 22 having an aperture 23 fitting over the threaded portion 21 of the post. The clamping plate 22 is U-shaped and has forwardly extending arms 24 of such length that the edges 25 thereof are adapted to engage the rear face of the instrument board when the clamping plate is placed over the threaded portion 21 of the post. After receiving the clamping plate 22, the threaded portion 21 of the post is adapted to have placed thereon a nut 26 and a washer 27, and when the former is tightened, it drives the clamping plate 22 forwardly against the back of the instrument board and at the same time draws the sleeve 12 backwardly so that the flange 15 engages firmly against the front face of the instrument board while the ends 25 of the clamping plate 22 are firmly clamped against the back of the instrument board.

The holding device also includes means for carrying current to the igniting device and a switch mechanism for normally opening the circuit leading to the igniting device. These means comprise a wire 28 connected to a battery 29 or other suitable source of current, which passes through a central bore in the post 18 and is connected at its end to a contact 31 mounted in a

bushing of insulating material 30 mounted in the post 18. This contact terminal 31 is not, however, directly engaged by the igniting unit, but is located within a sleeve or cap 32 slidably mounted on the post 18 and normally held in the position shown in Fig. 1 by a spring 33 with a flanged inner end 34 thereon engaging against a flange 35 on the post. At the center of its end portion, the cap 32 is provided with a contact 36 adapted to engage the live contact 31 on the post when the cap is moved inwardly against the tension of the spring 33, as shown in Fig. 2. This contact 36 is electrically connected with an external contact 37 adapted to engage the heating element or some other part of the igniting device to make contact therewith, and the contacts 36 and 37 are insulated from the cap 32.

The other contact on the holding device comprises a sleeve 12 which, being in electrical engagement with the instrument board, is connected to the other side of the battery 29 through the ground of the vehicle. If the instrument board should be made of wood or other insulating material, the other side of the battery may be connected to the sleeve 12 by a wire placed between the washer 27 and the clamping plate 22.

The igniting unit 10 comprises a cylindrical body 38 carrying at one end a heating element 39. This heating element comprises a sleeve 40 of lava or the like having screw-thread engagement 41 with the end of the body 38. The lava sleeve 40 supports a disk 42 carrying a coil 43 of resistance wire the outer convolution of which is secured to the disk while the inner end is carried by a post 44 insulated from the disk 42 substantially as shown in my co-pending application, Serial No. 304,745, filed September 8th, 1928, to which reference should be had for a more complete understanding of the means for holding the heating element and plate together. In the present case, the plate or disk 42 is held to the lava sleeve 40 by a metal ferrule 45 spun around the outer edge of the plate 42 and over a flange on the lava body.

The diameter of the ferrule 45 is such that it has rubbing contact with the internal wall of the sleeve 12 when the igniting unit is supported in the sleeve; and the post 44 is located in line with the contact 37 so that when the igniting unit is placed in the holding device, as shown in Fig. 1, the post 44 engages the contact 37.

It will thus be seen that the igniting unit has two-pole electrical engagement with the holding device when supported on the holding device in normal position, as shown in Fig. 1, i. e., when not translating current.

To cause current to flow through the resistance wire 43 so that the heating element may be brought to incandescence, the igniting unit is pressed inwardly from the position shown in Fig. 1 to that shown in Fig. 2, and by this movement the cap 32 is caused to slide on the post 18 so as to bring the contact 36 into electrical engagement with the live contact 31 in the post 18. Current may then flow from the battery 29 through the wire 28, contact 31, contacts 36 and 37 to the post 44. Then, through the coil of resistance wire 43 to the plate 42, then to the ferrule 45 and from that to the sleeve 12 back through the ground to the battery 29.

So that the igniting unit may be held in the holding device, against accidental removal and yet without employing interlocking devices or detents which would cause in a jerky motion to result when trying to remove the igniting unit,

the present invention provides slits 46 in the sleeve 12 so that the strip 47 between the slits may be biased inwardly to frictionally engage the ferrule 45 and the body 38 of the igniting unit to resiliently hold the latter in the socket 12. In addition to having the friction above specified, the resilient strips 47 by engaging the ferrule 45 form good electrical contact therewith.

While the resilient strips 47 engage the igniting unit with sufficient force to hold it in the socket against accidental removal, its holding action is such that the igniting unit will be moved from the position shown in Fig. 2 to that shown in Fig. 1, where the circuit is opened, by the spring 33 against the resistance of the resilient strips 47. Hence, should the igniting unit be pressed inwardly and instead of being bodily removed from the holding device to be applied to a cigar or cigarette to ignite the same, is merely released again, the spring 33 will cause the igniting unit to be slid outwardly relative to the sleeve and permit the circuit to be opened between the contacts 31 and 36.

Since the igniting unit is slid into the holding device with the heating element foremost where it is concealed from the view of the user, the present invention provides means for enabling the user to ascertain when the resistance wire 43 has been brought to incandescence. To do this, the plate 43 is provided with apertures 48 and the lava body 40 and body 38 are made hollow, thus permitting light emanating from the incandescing resistance wire 43 to pass through the interior of the body 28. In one form of the invention, that shown in Figs. 1 to 3, the end wall 49 of the body 38 is provided with a window or lens 50 through which the glow of light may be seen by the user.

In the form of the invention shown in Fig. 6, however, the end wall 49 is closed and the body 38 is made, as indicated, of translucent material. When this material is employed, the entire head 51 of the igniting unit is caused to glow when the heating element has been brought to incandescence.

The sleeve 12 is provided with ventilating apertures 52 to dissipate the excess heat which may result from holding the igniting unit 10 in closed-circuit position for a longer period than is necessary to bring it to incandescence.

The invention shown herein is an improvement on my copending applications, Serial No. 325,877, filed December 13, 1928, and Serial No. 352,376, filed April 4, 1929, in which applications I have disclosed and broadly claim means for indicating the incandescence of the heating element.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent is:—

1. An electric cigar-lighter comprising a holding device having a sleeve adapted to extend through a hole in an instrument board of a motor vehicle or the like; a flange adapted to engage the face of the instrument board at the margin of the hole; a reduced threaded member at the inner end of said sleeve; a U-shaped plate fitting over said reduced threaded member and having forwardly extending arms surrounding said sleeve and having their forward ends facing the rear face of the instrument board; and a threaded member cooperating with the threaded member on the sleeve adapted to engage the

U-shaped bracket and draw the flange on the sleeve against the front face of the instrument board and push the ends of the U-shaped plate firmly against the back face of the instrument board to firmly hold the holding device in operative position on the instrument board.

2. In an electrical device of the class described, a holding device and an igniting unit adapted to be supported on the holding device for quick removal and replacement, one of said devices constituting a plug and the other constituting a socket to receive the plug, and one of said devices having resilient means to engage the other and frictionally hold the two devices together, said igniting device having a heating element and being held by said resilient means in two-pole electrical engagement with the holding device when not translating current; and a switch device on said holding device comprising a movable circuit closer movable to position to close a current supply circuit through said heating element by movement of the igniting device relative to the holding device against the resistance of said resilient means, said switch being normally biased to move the igniting unit to open circuit position and being adapted to move the igniting unit against the resistance offered by said resilient means.

3. In an electric cigar-lighter, an igniting unit adapted to be mounted on a tubular holding device for quick removal and replacement, said igniting unit comprising: a cylindrical body portion adapted to extend into said tubular holding device; and a heating element including a resistance element and support therefor removably mounted in the end of the body which extends into said tubular holding device, said heating element being adapted to be brought to incandescence while supported in said holding device, and said body and support for the heating element being hollow to permit light emanating from the incandescing heating element to be seen by the user while the igniting unit is still located in the holding device.

4. In an electric cigar-lighter, an igniting unit adapted to be mounted on a tubular holding device for quick removal and replacement, said igniting unit comprising: a cylindrical body portion adapted to extend into said tubular holding device; and a circular heating element removably mounted in the end of the body which extends into said tubular holding device, said heating element and body being in light conducting relation and the body being of translucent material so that the glow resulting from incandescence of the heating element can be viewed by the user without removing the igniting unit from the holding device.

5. An electric cigar-lighter comprising a holding device and an igniting unit adapted to be

mounted on the holding device for quick removal and replacement, said igniting unit comprising a cylindrical body portion and a heating element mounted at one end of said body portion and having a resistance wire and a ferrule in contact with one end of the resistance wire, and said holding device comprising a tubular member or sleeve of metal into which a substantial portion of the cylindrical body of the igniting unit carrying the heating element is adapted to extend to be supported therein, said metal sleeve being slit and normally biased to resiliently engage the ferrule of the heating element when the latter is located in the sleeve to retain the igniting unit within the sleeve against casual removal, current being conducted from said ferrule to said sleeve by said biased portions of the sleeve.

6. A heating element for cigar-lighters comprising a cylindrical body of insulating material having a reduced neck provided with means for securing it to an igniting element; a heater coil; mounting means therefor; means for securing the heater coil mounting means on the body of insulating material comprising a metallic ferrule engaging one end of the heater coil and constituting a contact thereof, said body being hollow and said mounting means being capable of allowing the passage of light therethrough into the hollow portion of the body.

7. In an electric cigar-lighter, an igniting unit adapted to be mounted on a tubular holding device for quick removal and replacement, said igniting unit comprising: a cylindrical body portion adapted to extend into said tubular holding device; and a heating element mounted on the end of the body which extends into the tubular holding device, said heating element and body being made in light conducting relation and the body being of translucent material so that the glow resulting from incandescence of the heating element can be viewed by the user without removing the igniting unit from the holding device.

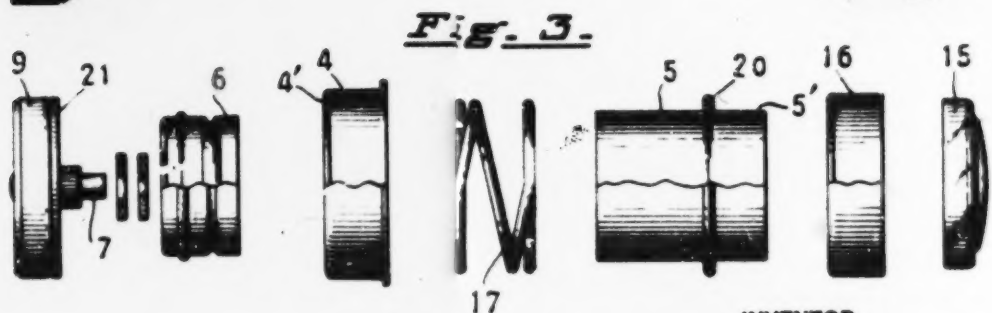
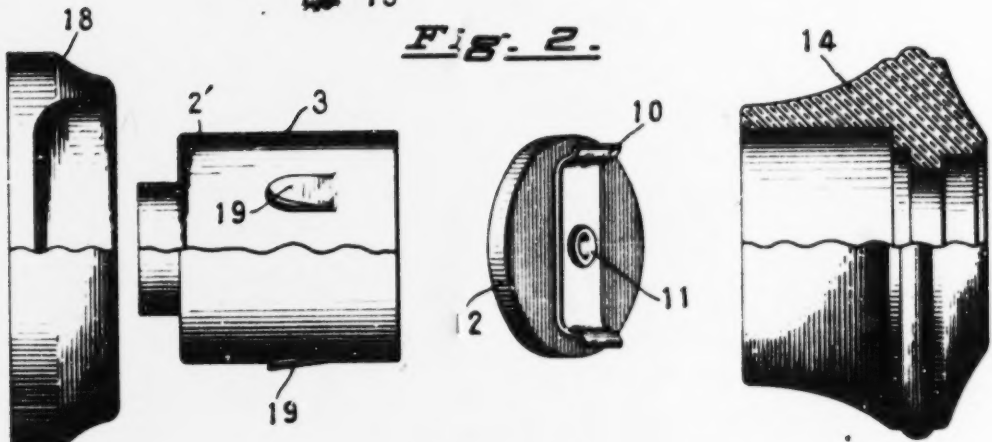
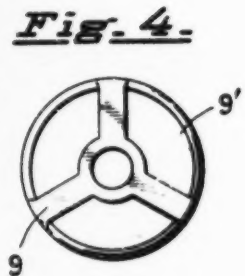
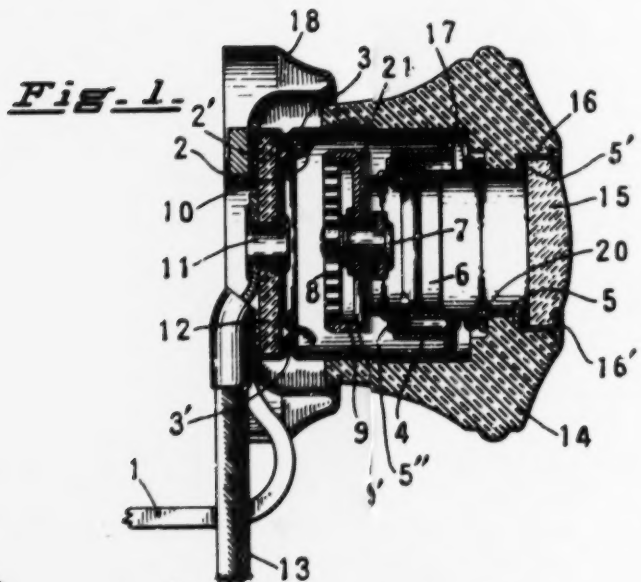
8. In an electric cigar-lighter, an igniting unit adapted to be mounted on a tubular holding device for quick removal and replacement, said igniting unit comprising: a cylindrical body portion adapted to extend into said tubular holding device and having an operating knob protruding from the holding device; and a heating element mounted on the end of the body which extends into the tubular holding device, said heating element and body being in light conducting relation and the knob being of translucent material so that the glow resulting from incandescence of the heating element can be viewed by the user without removing the igniting unit from the holding device.

JOSEPH H. COHEN. 135

Nov. 6, 1934.

S. L. WOLFSON
ELECTRIC CIGAR LIGHTER
Filed April 10, 1931

1,980,157



INVENTOR
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UNITED STATES PATENT OFFICE

1,980,157

ELECTRIC CIGAR LIGHTER

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Application April 10, 1931, Serial No. 529,033

26 Claims. (Cl. 219—32)

This invention relates to lighters for cigars, cigarettes, etc. of the type which are adapted to be heated on its support and then readily withdrawn from the electric supply connections for lighting a cigar, etc.

An object is to provide an inexpensive device of this type in which the heater element is carried on the inner end of a removable member.

Another object is to provide such a device which is of simple construction having an electric and heat insulating member serving as one of the bearing members for a slidable bearing during heating, removal and subsequent insertion.

Another object is to provide a device in which the igniter is housed and yet in which the glow of the igniter can be seen when it is heated.

Fig. 1 is a cross section of one embodiment of this invention.

Fig. 2 shows some of the parts before assembly.

Fig. 3 shows the heater element and some of the parts carried by the removable insulating socket member.

Fig. 4 is a detail of the heater element support.

Referring to Fig. 1, some customary support such as the usual bracket 1 attached to the dashboard of an automobile carries a supporting plug or tubular outer contact 3, which is secured thereto by the bent flange 2 fitting within and around a perforation in said bracket.

The outer end of said plug 3 is engaged by the wall or cup-shaped member or contact ring 4 slidable on the metal tube or sleeve 5. Also carried by the metal sleeve 5 is the removable metal base member 6 to which is clamped the heater coil or element 8 and its support or contact ring 9 by the stud or rivet 7. Yieldable interior contact member 10 is secured within the supporting plug as illustrated by means of the eyelet 11 passing through the disc 12 of insulating material such as fibre or a phenolic condensation product or a mixture thereof with asbestos. Disc 12 is held between the wall 3' and the bead 3'. The conducting lead 13 is secured as shown to the headed eyelet 11.

Slidably bearing on the plug 3 is the supporting knob or socket member 14 preferably of insulating material such as a phenolic condensation product or the like. As shown in Fig. 1, the right end of the metal sleeve 5 is closed by the glow window 15 of either transparent or translucent material held in place by the spun-over flange of the ferrule 16 to which is secured the socket and sleeve members 14 and 5.

The outer end 5' is flanged over to hold the

ferrule 16 in place and to secure it in the socket or knob 14, the flange 20 serving as an abutment. When the sleeve 4 is in place the flange 5'' is turned to prevent the parts from separating. The coil spring 17 is compressed between the flange 20 and the flange 4' so as to normally keep the socket member 14 and the lighter element flange 9 carried thereby out of contact and away from the yieldable contact member 10. An ornamental dash plate 18 may be secured to the plug in the manner illustrated. If desired yieldable retaining portions 19 may be stamped out from the sides of the plug 3 to assist in frictionally retaining the socket member in place, although if desired such may be eliminated.

The socket member 14 may have a sufficiently tight fit upon the plug 3 so that no such members 19 are needed, or if desired the engagement between the plug 3 and socket member 14 may be looser if the plug is mounted to extend in an upward direction so that gravity may hold the socket member in place.

The electric current enters through the conductor 13, thence to the yieldable contact members 10 and when the socket member 14 is pressed to the left, in Fig. 1, so as to close the circuit between the yieldable contacts 10 and the heater supporting cup or ring member 9, the current then flows through the heater.

From the center of the heater the current passes through the stud 7, unit base 6, sleeve 5, cup or wall member 4 to the plug 3 which is grounded to the frame of the car. When the heater element becomes incandescent its condition may be viewed through the glow window 15 and when hot enough the socket member may be withdrawn. In withdrawing the socket member 14 the cup member 4 and spring 17 are carried by the sleeve 5 and the socket member 14 provides a convenient heat insulated grip or handle portion while the cigar or cigarette is being lighted from the heater element 8.

In assembling this lighter the insulating disc 12 carrying the yieldable contacts 10 is inserted into the plug 3 from the right end, as shown in Fig. 2, after which the flanges holding the disc in place may be bent up as illustrated in Fig. 1. The outer end of the plug 3 is then bent inwardly at 3' to provide an engagement for the cup 4 carried by the socket member 14.

The heater element mounted within its supporting ring 9 is held in place by the stud 7 clamping the members 9 and 6 together with the insulating disc 21 therebetween. The portions of the members 9 and 6 which are contiguous

ous the insulating disc 21 are not solid or im-
perforate but are either spoke-shaped or pro-
vided with perforations such as 9' as shown in
Fig. 4 through which light from the heater
5 element is passed to permit the heater element to
be viewed through the glow window 15. The in-
sulated disc 21 must, of course, be of some trans-
lucent or transparent or perforated insulating
material.

10 The unit base 6 is secured within the sleeve
5 by means of a yieldable horseshoe shaped de-
tent or otherwise so as to permit the base 6 to
be normally carried and movable with the sleeve
5 but permit removal thereof for renewal of
15 the heater element when necessary.

In order to assemble the parts shown in Fig. 3
within the socket member 14, the sleeve 5 is first
inserted in the socket member 14 from the left
and the ferrule 16 inserted from the right. The
20 outwardly bent flange 5' on the right end of the
sleeve 5 may then be formed to secure the fer-
rule 16 in place, after which the glow window 15
can be inserted and the ferrule 16 bent down as
illustrated at 16' to retain it in place. The
25 spring 17 is next placed on the sleeve 5 and then
the cup member 4 placed over the spring, after
which the outwardly bent left end 5'' of the
sleeve 5 may be formed to retain the cup and
spring permanently in place on the sleeve 5.

30 The wearing character of the socket member
14 is such that it may bear directly upon the
supporting plug without the interposition of any
metal wear resisting part being necessary.

One advantageous feature of the present con-
35 struction is the location of the spring within the
removable member so that it is spaced from the
heater or resistance element and is located be-
tween the heater and the forepart of the remov-
able member. The engagement of the heater
40 rim housing with an outwardly inclined contact
10 at substantially opposite locations is another
advantageous feature.

I claim:

1. A cigar lighter comprising a stationary and
45 a removable element, the stationary element in-
cluding an external tubular contact and an in-
ternal contact, the removable element including a
knob having a wall slidable on the tubular con-
50 tact, a conducting tube fixed within the knob and
movable therewith, a contact ring slidable on said
tube and adapted to engage the tubular contact
when the movable element is mounted on the
stationary element, a spring interposed between
55 the contact ring and a portion of the knob which
is stationary with respect to the tube, and a heater
element mechanically supported by said tube and
having one end electrically connected to the tube,
the other end of said heater element constituting
60 a contact ring adapted to engage the contact in
the stationary element.

2. A cigar lighter element comprising an in-
sulating knob, a metal tube fixed in the knob, a
contact ring slidable on said tube, a spring in-
terposed between said ring and said knob, a heater
65 coil supported by said tube within said knob and
having one end electrically connected to said tube,
a second contact ring carried by said tube and sur-
rounding and electrically connected to the outer
end of said coil and adapted for engagement with
70 a stationary contact, said knob having a wall
adapted to be slidably supported upon a station-
ary contact tube, said spring normally holding
the circuit open and the second contact ring out
of engagement with its cooperative stationary
75 contact.

3. A cigar lighter comprising a knob having a
wall adapted to be slidably supported upon a sta-
tionary contact tube, a metal tube mounted within
said knob and having external flanges embracing
portions of said knob, a contact ring slidable upon
said tube, a spring interposed between said ring
80 and one of said flanges, a heater element me-
chanically supported by said tube beyond said
ring and having one end electrically connected to
said tube and a second contact ring coaxially car-
ried by said tube end portion and electrically con-
85 nected to the other end of said heater element,
said spring normally holding the circuit open
through said second contact ring by holding said
knob and second ring away from a stationary 90
contact member.

4. A cigar lighter element comprising an in-
sulating knob having a central passage and hav-
ing a wall adapted to be slidably mounted upon a
stationary support, a metal tube fixed in said
95 passage and having flanges interlocked with said
knob, a contact ring slidable on said tube for
electrically connecting said tube and said sta-
tionary support, spring means mounted on the
tube and coaxing with said contact ring and knob
100 for normally holding the circuit open, a second
contact ring carried by the inner end portion of
said tube but insulated therefrom and adapted
for cooperation with a stationary contact within
said stationary support, and a heater coil having
105 one end connected to the latter contact ring and
the other end connected to said tube.

5. A cigar lighter, comprising a stationary ele-
ment and a removable element, the stationary
element consisting of a tubular outer contact and
110 an interior contact, the removable element com-
prising an insulating knob having a wall slidable
upon the tubular outer contact, a tube having one
end fixed in the knob, a contact ring slidable on
said tube, a heater coil supported by said tube
115 and having one end electrically connected to said
tube and a contact member for the other end of
said coil adapted to engage the interior contact in
the stationary element when the knob is moved
inwardly on the tubular outer contact, said con-
120 tact ring electrically connecting the tubular outer
contact with said tube and the other end of said
heater coil, a spring interposed between the sta-
tionary part of said knob and said contact ring,
and an abutment on said tube for limiting the
125 movement of the contact ring with respect to the
tube.

6. A cigar lighter comprising a stationary ele-
ment and a removable element, the stationary
element consisting of a tubular outer contact and
130 an interior contact, the removable element com-
prising an insulating knob telescoping over the
tubular outer contact, a tube having at least one
end fixed to the knob, a contact ring slidable on
said tube, a heater coil supported by said tube
135 and having one end electrically connected to said
tube, and a contact member for the other end of
said coil adapted to engage the interior contact
in the stationary element when the knob is moved
inwardly on the tubular outer contact, said con-
140 tact ring engaging and electrically connecting the
tubular outer contact with said tube and the other
end of said heater coil, a spring interposed be-
tween the stationary part of said knob and said
contact ring, and an abutment fixed on said tube
145 for limiting the movement of the contact ring
with respect to the tube, and another abutment
intermediate the tube ends for engagement with
said spring and formed of bent tube material.

7. A cigar lighter comprising a stationary ele- 150

ment and a removable element, the stationary element consisting of a tubular outer contact and an interior contact, the removable element comprising an insulating knob slidable upon the tubular outer contact, a tube having at least one end fixed to the knob, a contact ring slidable on said tube, a heater coil supported by said tube and having one end electrically connected to said tube, and a contact member for the other end of said coil adapted to engage the interior contact in the stationary element when the knob is moved inwardly on the tubular outer contact, said contact ring electrically connecting the tubular outer contact with said tube and the other end of said heater coil, a spring interposed between the stationary part of said knob and said contact ring, and an abutment fixed on said tube for limiting the movement of the contact ring with respect to the tube, said last mentioned abutment including a bent metallic flange adjacent an end portion of said tube.

8. A cigar lighter comprising a stationary element and a removable element, the stationary element consisting of a tubular outer contact and an interior contact, the removable element comprising an insulating knob slidable upon the tubular outer contact, a tube having at least one end fixed to the knob, a contact ring slidable on said tube, a heater coil supported by said tube and having one end electrically connected to said tube, and a contact member for the other end of said coil adapted to engage the interior contact in the stationary element when the knob is moved inwardly on the tubular outer contact, said contact ring engaging and electrically connecting the tubular outer contact with said tube and the other end of said heater coil, a spring interposed between the stationary part of said knob and said contact ring, and an abutment fixed on said tube for limiting the movement of the contact ring with respect to the tube, said tube being formed of two parts secured together and of different axial length, the shorter part of said tube being adjacent the heater coil and secured thereto by a fastening means passing centrally through the heater coil.

9. A cigar lighter comprising a stationary element and a removable element, the stationary element consisting of a tubular outer contact and an interior contact, the removable element comprising an insulating knob slidable upon the tubular outer contact, a tube having at least one end fixed to the knob, a contact ring slidable on said tube, a heater coil supported by said tube and having one end electrically connected to said tube, and a contact member for the other end of said coil adapted to engage the interior contact in the stationary element when the knob is moved inwardly on the tubular outer contact, said contact ring electrically connecting the tubular outer contact with said tube and the other end of said heater coil, a spring interposed between the stationary part of said knob and said contact ring, and an abutment fixed on said tube for limiting the movement of the contact ring with respect to the tube, a disc of insulating material between said tube and contact member which engages the interior contact of the stationary element, said disc being clamped by an axial fastening means electrically connected to said tube.

10. A cigar lighter comprising a stationary element and a removable element, the stationary element consisting of a tubular outer contact and an interior contact, the removable element com-

prising an insulating knob slidable upon the tubular outer contact, a tube having at least one end fixed to the knob, a contact ring slidable on said tube, a heater coil supported by said tube and having one end electrically connected to said tube, and a contact member for the other end of said coil adapted to engage the interior contact in the stationary element when the knob is moved inwardly on the tubular outer contact, said contact ring engaging and electrically connecting the tubular outer contact with said tube and the other end of said heater coil, a spring interposed between the stationary part of said knob and said contact ring, and an abutment fixed on said tube for limiting the movement of the contact ring with respect to the tube, and another abutment for said spring, both abutments being intermediate the tube ends and formed of bent tube material, said tube being formed of two parts, one of which is adjacent the heater coil and secured thereto by a fastening means passing centrally through the heater coil, a disc of insulating material between said tube and the contact member which engages the interior contact of the stationary element, said disc being clamped by said central fastening means of the heater coil.

11. A cigar lighter comprising a socket member having a projecting metal tube constituting a circuit terminal with a spring finger projecting outward laterally therefrom and having an interior contact terminal insulated from the metal tube and a removable lighter member having an insulating knob slidable upon the outside of the metal tube and held frictionally in place by said spring finger, a metal sleeve having one end fixed within the knob, a metal ring slidable upon said sleeve and constituting a contact adapted to engage the outer end of the metal tube of the socket member, a spring surrounding the sleeve and interposed between a portion of the ring and a part of the sleeve so as to resiliently press the knob and sleeve outwardly away from the socket member, a resistance igniter carried by the rear end of the sleeve and having one end electrically connected to the sleeve and a contact carried by the rear end of the sleeve but electrically insulated therefrom and electrically connected to the other end of the igniter, said contact being adapted to engage the contact terminal within the socket member when the knob is pressed inwardly upon the metal tube and the spring has been compressed.

12. A lighter comprising a stationary element including a pair of contacts, a removable element slidably supported on one of said stationary contacts and including a pair of contacts, one of which normally engages the supporting contact of the stationary element and the second of which is adapted to engage the other stationary contact on sliding said removable element, said removable element also including a knob of insulating material, a tube fixed in the knob, a slidable contact ring on the tube shaped to engage and electrically connect said tube and the supporting contact of the stationary element, a spring between said ring and knob for normally holding said knob in position with its second contact disengaged from its cooperative stationary contact, a heater coil carried by said knob, said spring being adapted to be compressed against said ring and stationary supporting contact by sliding said knob toward the stationary contacts for closing the circuit between said normally open contacts.

13. In a cigar lighter of the type described,

the combination of a stationary unit having a hollow post and an insulated contact member within said hollow post, a hollow portable unit formed with an opening through its face wall, a cylindrical supporting member mounted in said opening and having at its inner end a transverse wall and an annular abutment flange, a friction sleeve formed with a transverse wall slidably mounted on said supporting member and adapted to telescopically engage with said hollow post, a cup-shaped cooperating contact member mounted on said transverse wall, an igniter coil mounted in said last-named contact member, said transverse wall and the bottom wall of said cup-shaped contact member being apertured to permit light rays from said igniter coil to pass through said opening, and a coil spring encircling said supporting member and confined endwise between the front wall of said portable unit and the transverse wall of said sleeve.

14. In a cigar lighter of the type described, the combination of a stationary unit having a hollow post and an insulated contact member within said hollow post, a hollow portable unit formed with an opening through its front wall, a cylindrical supporting member mounted in said opening and having adjacent its inner end a transverse wall and an annular abutment flange, a sleeve formed with a transverse flange slidably mounted on said supporting member and being adapted to telescopically engage with said hollow post, a cup-shaped cooperating contact member mounted on said transverse wall, an igniter coil mounted in said last-named contact member, said transverse wall and the bottom wall of said cup-shaped contact member being apertured to permit light rays from said igniter coil to pass through said opening, and a coil spring encircling said supporting member and confined endwise between the front wall of said portable unit and the transverse flange of said sleeve.

15. In a cigar lighter of the type described, the combination of a stationary unit equipped with an insulated annular contact member, a hollow portable unit telescopically engaged with said stationary unit and formed with an opening through its face wall, a cylindrical supporting member fixedly mounted in said opening, and having a transverse wall, a cup-shaped cooperating contact member mounted on said transverse wall, an igniter coil mounted in said last-named contact member, said transverse wall and the bottom wall of said cup-shaped contact member being apertured to permit light rays from said igniter coil to pass there-through, and a spring normally maintaining said contact members separated.

16. A cigar lighter of the cordless type including socket and plug members, one of which is removable and the other stationary, a heater element carried by the removable member, electrical connections carried by each of said members for engagement with the connections of the other member, the removable member being normally carried by the stationary member in an open circuit position and being bodily movable with respect to the stationary member into a closed circuit position for supplying current to the heater element, a spring carried by said removable member and arranged for cooperation with said stationary member to bodily move said removable member to an open circuit position from a closed circuit position upon removal of pressure from the removable member, said spring being helical and co-axially arranged within the removable member and adapted to extend into the stationary member

and means extending radially between the spring and an end portion of the stationary member whereby the force of the spring may be applied to such end portion of the stationary member.

17. A cigar lighter of the cordless type including socket and plug members, one of which is removable and the other stationary, a heater element carried by the removable member, electrical connections carried by each of said members for engagement with the connections of the other member, the removable member being normally carried by the stationary member in an open circuit position and being bodily movable with respect to the stationary member into a closed circuit position for supplying current to the heater element, a spring carried by said removable member and arranged radially within at least a portion of said stationary member for cooperation therewith to bodily move said removable member to an open circuit position from a closed circuit position upon removal of pressure from the removable member and a contact ring and guide therefor within the removable member cooperating with said spring, said contact ring being movable with respect to the removable member when pressure is exerted upon the removable member in moving the same to a closed circuit position.

18. A cigar lighter of the cordless type including socket and plug members, one of which is removable and the other stationary, a heater element carried by the removable member, electrical connections carried by each of said members for engagement with the connections of the other member, the removable member being normally carried by the stationary member in an open circuit position and being bodily movable with respect to the stationary member into a closed circuit position for supplying current to the heater element, a spring carried by said removable member and arranged for cooperation with said stationary member to bodily move said removable member to an open circuit position from a closed circuit position upon removal of pressure from the removable member and a contact ring secured and guided within the removable member when said spring is compressed by pressure upon the removable member in moving the same to a closed circuit position, said contact ring having at least two circumferential bends for engagement between an end portion of the stationary member and said spring, and a supporting guide for said contact ring, said guide also supporting the heater and secured to the removable member.

19. A cigar lighter of the cordless type including socket and plug members, one of which is removable and the other stationary, a heater element carried by the removable member, electrical connections carried by each of said members for engagement with the connections of the other member, the removable member being normally carried by the stationary member in an open circuit position and being bodily movable with respect to the stationary member into a closed circuit position for supplying current to the heater element, a spring carried by said removable member and arranged for cooperation with said stationary member to bodily move said removable member to an open circuit position from a closed circuit position upon removal of pressure from the removable member, said removable member being of insulating material and having a conducting tube therein on which said heater is mounted adjacent the rear portion of the removable member, said spring being coiled about said tube, and

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abutments on said tube for limiting the action of said spring.

20. An igniter replacement assembly for cigar lighters comprising two cup-like members facing
8 in opposite directions with their bases secured together but electrically insulated from each other, one of said cup-like members constituting a terminal flange and containing an igniting resistance wire having one end electrically and mechanically
10 connected thereto, the other end of the igniter wire being electrically connected with the other cup-like member, the latter cup-like member being longitudinally longer than the former and of smaller diameter and constituting a means for
15 attaching said unit to a supporting knob at a distance from the resistance wire, and means passing through the bases of said cup-like members for clamping them together with an insulating washer between them, said clamping means
20 being the electrical connection between the heater and said unit supporting cup-like member.

21. A removable member for a cigar lighter comprising a heater, a supporting handle portion
25 therefor insulated from the heater, a cup shaped contact ring surrounding the heater, another cup shaped conductor ring oppositely disposed to the contact ring and insulated from and between
30 the handle and the contact ring, both of said rings being radially within a surface of the removable member which is adapted to slide along the stationary member, and the conductor ring
35 constituting a sole support for the heater and being removably secured to said removable member on the inside thereof.

22. A removable member for a cigar lighter comprising a heater, a supporting handle portion
40 therefor insulated from the heater, a contact ring surrounding the heater, another contact ring insulated from and between the handle and the first mentioned contact ring, both of said rings being
45 radially within a surface of the removable member which is adapted to slide along the stationary member and said second ring being slidable with respect to the heater in a direction longitudinally
50 of the removable member, and said second ring being shaped for butt engagement with a portion of a stationary member adapted to support the removable member.

23. A cigar lighter of the cordless type including socket and plug members, one of which is
50 a stationary hollow post and the other removable, the removable member having a large portion of its body comprised of insulating material constituting the surface of the removable member
55 which is adapted to slide along the stationary member, said stationary member being of metal, a heater element carried on the rear portion of the removable member, electrical connections carried by each of said members for engagement
60 with the connections of the other member, the removable member being normally carried by the stationary member in an open circuit position, at least the insulating portion of the removable member being bodily movable along the
65 stationary member to a closed circuit position to supply current to the heater element, a helical spring coaxially carried by the removable member between the heater and the front of the removable member and remote from the heater, and
70 said spring being adapted to bodily move at least the insulating portion of the removable member and one of its electrical contacts from a position in which the heater circuit is closed to a position
75 in which the circuit through the heating element

is open upon removal of pressure from the removable member.

24. A cigar lighter of the cordless type including socket and plug members, one of which is
80 a stationary hollow post and the other removable, the removable member having a large portion of its body comprised of insulating material constituting the surface of the removable member which is adapted to slide along the stationary
85 member, said stationary member being of metal, a heater element carried by the removable member, electrical connections carried by each of said members for engagement with the connections of the other member, the removable member being
90 normally carried by the stationary member in an open circuit position, at least the insulating portion of the removable member being bodily movable along the stationary member to a closed circuit position to supply current to the heater
95 element, a helical spring coaxially carried by the removable member for cooperation with the stationary member and adapted to bodily move at least the insulating portion of the removable member and one of its electrical contacts from
100 a position in which the heater circuit is closed to a position in which the circuit through the heating element is open upon removal of pressure from the removable member, said spring being
105 longitudinally between the heater and a forepart of the removable member and longitudinally away from the heater zone, said spring being also radially inside of the outer surface of the stationary member and radially within the insulating
110 body part of the removable member, and said spring being also longitudinally within the insulating portion of the removable member and adapted to be placed at least in part longitudinally intermediate the ends of the stationary member.

25. A cigar lighter of the cordless type including socket and plug members, one of which is
115 removable and the other a stationary hollow post, a heater element carried by the rear portion of the removable member, electrical connections carried by each of said members for engagement
120 with the connections of the other member, the removable member being normally carried by the stationary member in an open circuit position and being bodily movable with respect to the stationary member into a closed circuit position for
125 supplying current to the heater element, a spring carried by said removable member and arranged for cooperation with said stationary member to bodily move said removable member to an open
130 circuit position from a closed circuit position upon removal of pressure from the removable member, said spring being helical and co-axially arranged within the removable member between the heater and a forepart of the removable member
135 and away from the heater, said spring being also radially inside the surfaces of the plug and socket members along which one slides with respect to the other.

26. A cigar lighter of the cordless type including socket and plug members, one of which is
140 removable and the other a stationary hollow post, a heater element carried by the removable member, electrical connections carried by each of said members for engagement with the connections of
145 the other member, the removable member being normally carried by the stationary member in an open circuit position and being at least in part bodily movable with respect to the stationary member into a closed circuit position for supply- 150

ing current to the heater element, a spring carried by said removable member and arranged for cooperation with said stationary member to bodily move at least a substantial part of said removable member to an open circuit position from a closed circuit position upon removal of pressure from the removable member, said spring being helical and coaxially arranged within the removable member, said spring being also radially inside the surfaces of the plug and socket members along which one slides with respect to the other, and said spring being also contiguous neither of said sliding surfaces but being carried substantially contiguous an inner and coaxial surface and spaced from the heater.

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Nov. 17, 1936.

P. E. ASHTON

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CIGAR LIGHTER

Filed Oct. 8, 1934

2 Sheets-Sheet 1

Fig. 1.

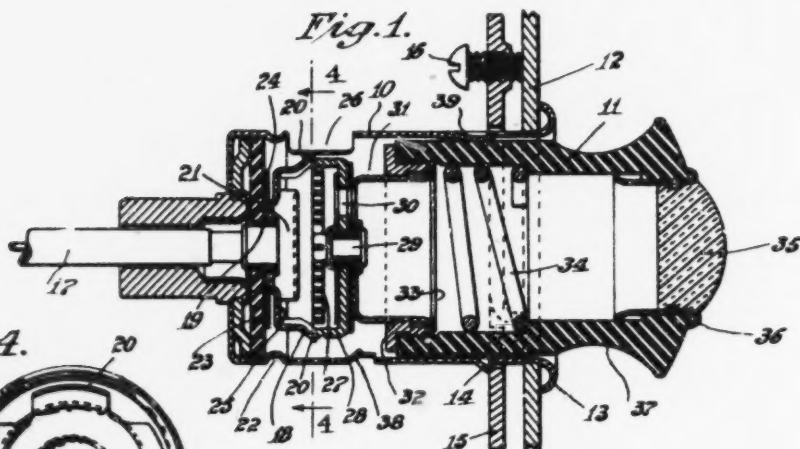


Fig. 4.

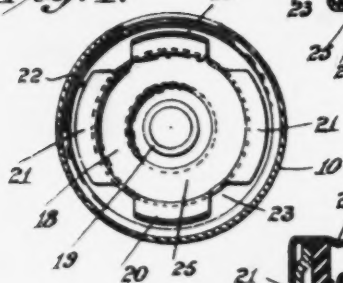


Fig. 2.

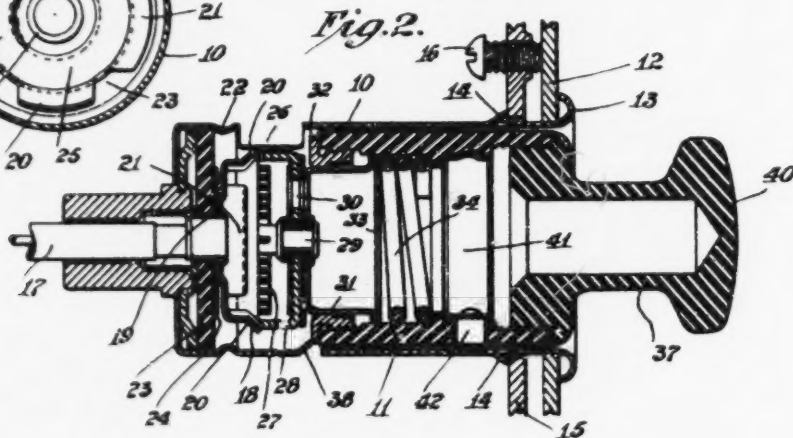
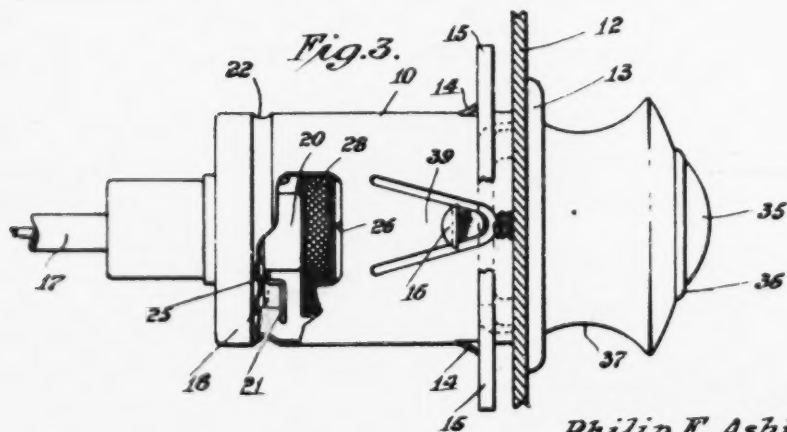


Fig. 3.



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CIGAR LIGHTER

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2 Sheets-Sheet 2

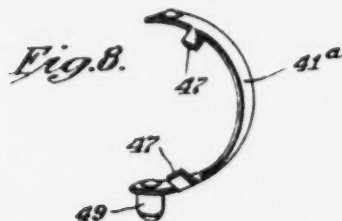
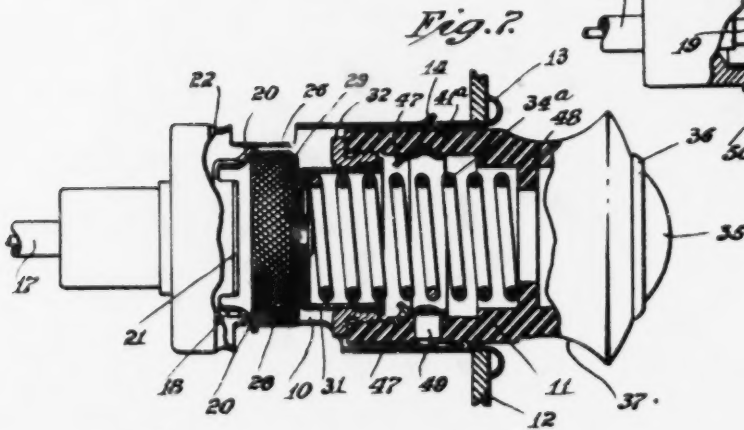
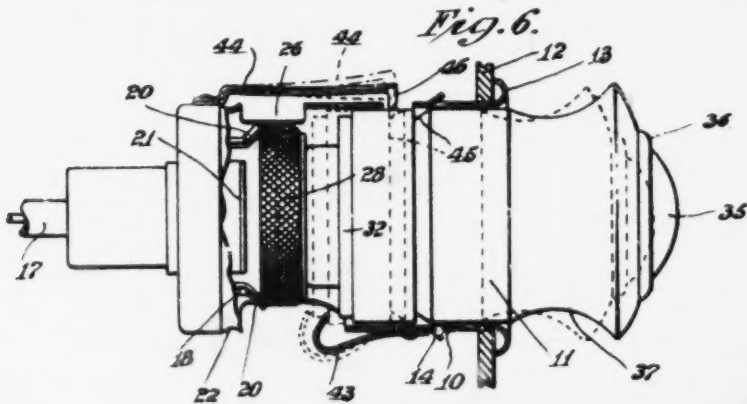
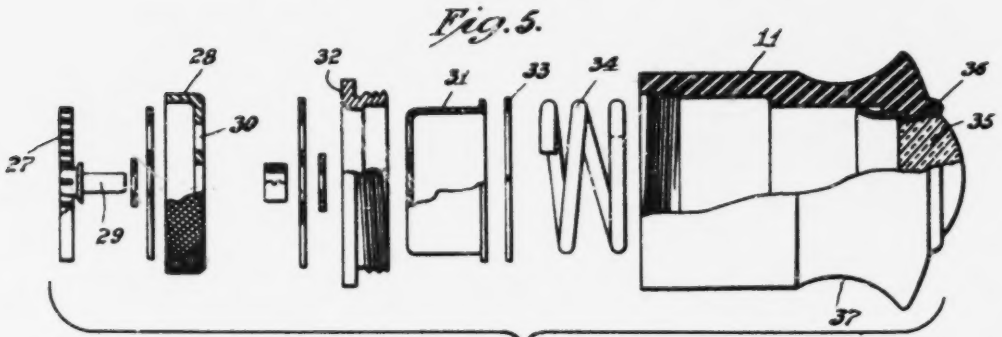
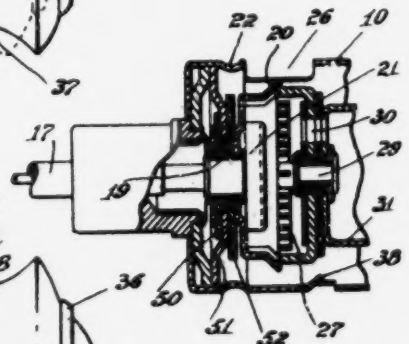


Fig. 9.



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UNITED STATES PATENT OFFICE

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CIGAR LIGHTER

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a corporation of Connecticut

Application October 8, 1934, Serial No. 747,377

18 Claims. (Cl. 219—32)

This invention relates to electric cigar lighters, especially those of the cordless type, and has for its object to provide a simple and inexpensive device of this class having few parts.

Another object is to provide such a device in which the spring for opening the heater circuit is carried by the removable member in a manner to be protected from the heater.

A further object is to provide a simple thermostatic control for such a device, which is adapted to open the circuit and permit at least a substantial part of the removable member to slide longitudinally of the stationary mounting member.

Referring to the drawings,

Fig. 1 is a longitudinal section through one embodiment of this invention with the circuit open.

Fig. 2 is another longitudinal section through a slightly modified construction showing the circuit closed.

Fig. 3 is a top plan view of the device of Fig. 1.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is an exploded view showing the parts comprising the removable member.

Fig. 6 is a longitudinal view partly in section showing the device of this invention controlled by a thermostat.

Fig. 7 is a longitudinal section of another modification of this invention.

Fig. 8 shows the arcuate spring used in Fig. 7.

Fig. 9 shows a preferred construction for mounting the center contact in the socket without the use of the large washer of insulating material.

The stationary socket member 10 carries the plug 11 which is largely of insulating material. The socket is secured to the dashboard 12 of an automobile or elsewhere in any convenient manner such for example as by providing the socket with a front flange 13 adapted to engage the front of the panel 12 and any convenient means for clamping the front flange against the panel. For purposes of illustration this securing means comprises a plate 15 which is contiguous a plurality of abutments 14 formed by stamped out lugs integral with the metal socket, such abutments 14 being preferably two or three in number and being substantially equi-distantly spaced angularly.

As shown in my copending application Serial Number 747,376 filed October 8th, 1934, the plate 15 has preferably three lugs engaging the rear of the panel 12, at least one of these lugs being adjustable and the adjustable lug is shown as being constituted by the screw 16 so that on tightening the screw the socket is held with its front flange clamped against the front of the panel 12.

Some convenient and customary form of central contact is mounted within the base of the socket supplied with current through the insulated conductor 17 to a rivet 18 which holds the center con-

tact 18 in position. Unlike the usual center contacts the one of this invention is shown in Fig. 4 as being comprised of two opposite prongs 20 which are slightly yieldable and engage the outer edge of the resistance element housing ring. There are also provided a pair of oppositely spaced contact prongs 21 which are less yieldable than those numbered 20, the latter being substantially rigid.

Some convenient means may be provided for positioning the center contact within the socket, such as the stamped bead 22 which engages the insulating disc 23 to hold the same within the socket base. The disc 23 is preferably of "phenolite" or other appropriate electrical and thermal insulating material. The center contact 18 is secured to the insulating disc 23 and thereby centrally positioned in the socket.

The center contact is substantially dished as is customary but instead of the base of this center contact 18 being all of it contiguous the insulating disc 23, it has been found desirable to have the base of this center contact 18 stepped as illustrated in Figs. 1 and 2 so that only a small central portion of the base is contiguous the insulating disc while a substantial portion 25 of the bottom is stepped or offset from the insulating disc in order to provide space for the passage of cooling currents of air which pass substantially transversely through the large perforations 26 in the socket around the heater and center contact. A mica washer 24 has been mounted between the insulating disc 23 and the center contact 18, as such has been found desirable where the insulating disc 23 may not be a good thermal insulator.

There are preferably two or three or more large size perforations 26 to allow the air currents to enter and pass through and around the socket for cooling purposes.

Some usual type of resistance element 27 is provided in spiral form one end of which is preferably welded to the rim of the housing 28. The other end of the heating coil 27 is secured in the rivet 29 by clamping or in some other usual manner. The rivet 29 carries the current to the heater supporting tube 31 and as illustrated the housing 28 is insulated from the rivet and tube 31 by the insulating washers and the central bushing, as is usual.

Where desired the insulating washers and the vertical wall of the housing 28 may be provided with perforations 30 of a substantially large angular extent to provide better ventilation where the body of the plug may be perforated or to allow the transmission of any light desired from the heater when it has become hot enough to glow.

The supporting tube or annular member 31 is made slidable within the contact ring or annular 60

or tubular member 32 and this latter ring is illustrated as being threaded to the inside of the insulating material constituting the main body portion of the plug or tubular member 11. Where the outer surface of the housing rim 28 is knurled as shown in Figs. 3 and 5 for example to facilitate unscrewing the heater supporting tube 31 and the ring 32 from the body of insulating material, it will be understood that the tube 31 is preferably splined to the ring 32 by means of a stamped longitudinal rib and recess, in order to prevent the tube 31 from turning within the contact ring 32 yet permitting the one to shift longitudinally with respect to the other.

Within the plug is shown a coaxial helical spring 34 cooperating at one end with a shoulder formed in the tubular body member of insulating material and at its other end with the enlarged rim or radial flange on the tube 31 so that the spring 34 normally tends to push the heater and its support 31 away from the handle end of the plug.

To electrically and thermally insulate the spring 34 from the supporting tube 31 a mica washer 35 is preferably placed around the end of the tube 31 in order to prevent the transfer of any dangerous amount of heat to the spring 34.

In accordance with the usual practice the front of the bore through the plug may be closed by an ornamental piece of colored glass 36 which may also be translucent. This glass 36 is held in place by a ferrule 36 of the one piece construction illustrated or of the two piece construction as shown by my copending application previously referred to. The usual finger groove 37 is provided to assist in holding the removable plug member.

For closing the circuit the socket 18 is provided with inwardly bent lugs or abutment contacts 38 adapted to engage the surface of the contact ring 32 which is toward the heater.

In operation the device of Fig. 1 is normally held in the open circuit position illustrated with the heater cup 28 in contact with the central socket contact 18. On pushing in the main body portion of the plug against the action of the spring 34 the spring is compressed and the contact ring 32 slid along the socket member until it engages the abutment contacts 38 to close the circuit through the heater element.

Upon removal of the pressure the spring pushes the main body portion of the plug away from the abutment contacts to open the circuit, should the plug not be pulled out for lighting a cigar or cigarette. There are preferably two or three or more abutment lugs 38 which contact with the ring 32 in closing the circuit.

In compressing the spring and moving the main body of the plug inwardly the yieldable portions 29 of the center contact may allow limited movement of the heater element until the non-yieldable portions 21 are engaged. It is not necessary that any portion of the center contact 18 be yieldable in the device illustrated in Fig. 1 and the heater may be held normally in engagement with the center contact by some convenient type of friction device between the plug and socket.

While any well known construction for such friction device common in socket devices in any art may be used, nevertheless in Fig. 3 has been shown an improved type of bent friction tongue which is adapted to engage the surface of the plug and hold the plug within the socket. The ordinary friction tongues having parallel sides

have not been found to be stiff enough without the expense of reinforcing because the maximum bending moment and practically the entire bending movement occurs at the base of such a tongue.

In Fig. 3 has been shown a construction providing a stiffer and more serviceable friction device comprised of a tongue 39 whose sides diverge away from the tip so that the base of the tongue is wider and of more metal than any other portion and therefore the bending necessary in the tongue 39 will not be localized at the base but will be distributed throughout the tongue.

Another factor contributing to the greater serviceability of the friction device illustrated in Fig. 3 is due to the fact that the socket 18 is rounded and therefore the base of the tongue is arcuate in cross section which is equivalent to thickening the tongue a greater amount at the base than at the tip and due to the curvature of the tongue this equivalent thickness so far as bending occurs is reduced toward the tip since the angular extent of the tongue circumferentially of the socket is gradually less toward the tip of the tongue. As shown in Fig. 1 the tip of the tongue 39 is slightly turned up as well as being bent down to smoothly engage the plug surface and avoid catching on the rear edge of the plug.

In Fig. 2 the construction is the same as that in Fig. 1 except in regard to the type of friction device used and in regard to the shape of the finger gripping portion of the plug. Instead of having the finger gripping channel 37 of the shape illustrated in Fig. 1, it will be seen that in Fig. 2 this channel is deeper and is formed in a separate piece of insulating material 40 which is screwed on to the main body insulating portion of the plug.

The separate handle portion 40 may also be of metal if desired, or of some one of the numerous translucent or opaque insulating materials. As shown and described in my aforementioned application, an arcuate spring 41 normally presses a button 42 into engagement with the socket 18 for frictionally retaining the plug in position. The rest of the plug is the same as that shown in Fig. 1, as is also the socket, the only difference being that the plug is shown in a circuit closing position in Fig. 2 with the contact ring 32 in engagement with the ground abutments 38. It will be understood that instead of the friction means 42, some other form of commonly used friction device from any art may be substituted.

It is thought the exploded view of Fig. 5 needs no additional description in view of the foregoing remarks.

In Fig. 6 the plug and socket members are similar to those in either Figs. 1 or 2 with the addition of a thermostatically controlled latch 44 on the socket member for engagement with a peripheral groove 45 in the plug member when the plug is in a closed circuit position with the contact ring 32 engaging a slightly yieldable ground abutment 43 instead of the somewhat rigid abutments 38. On pushing in the plug to a closed circuit position the ring 32 engages the ground connection 43, the closed circuit position being as shown in dotted lines in Fig. 6.

The thermostatic latch 44 of bimetallic strip material is secured at the rear end of the socket by a rivet or in other convenient manner and is so shaped as to normally tend to slip into the groove 45 under its own resiliency. The socket

10 being provided with the large perforations 26 makes it possible for the air heated by the resistance element 27 to rise through the socket upper wall and come in contact with the thermostatic element 44. As this strip is heated to a predetermined amount it then snaps out of the groove 45, allowing the hook end of the latch to be released from engagement with the plug whereby the spring 34 in the plug pushes the main body portion of the plug outwardly opening the circuit between the ground contact 43 and the ring 32. An advantage of such a thermostat control is the elimination of the necessity for the operator holding the plug member pressed in during the time the resistance element is heating up.

While this time is relatively short, nevertheless the use of the thermostat control also gives uniformity in heating and makes it possible for an operator to get the same degree of heat in the plug each time it is pulled out, where the operator waits until the thermostatic latch opens the circuit before withdrawing the plug.

There is enough snap action resulting from the opening of the thermostatic latch to constitute a visual and audible signal that the plug is ready to be withdrawn for lighting, the audible signal being due to the release and snap movement of the latch and plug and the visual signal being due to the outward movement of the main body portion of the plug rather than to the transfer of any light from the incandescent heater through the fairly long body of the plug, in daylight and where as usual the driver or operator sits to one side of the cigar lighter.

In Fig. 7 is shown a slightly modified construction in which the spring 34a is considerably longer and connects the inner end of the supporting tubular member 31 at one end and an abutment 48 in the tubular member 11 at the other end of the spring. Where the spring would otherwise be in contact with the tubular metal ring 31, it is desirable to provide an insulating washer of mica or other insulating material to prevent heat transfer to the spring 34a. In this embodiment the ground abutments of Figs. 1, 2 and 6 have been eliminated and instead the ground contact is formed through a metal button 49 which is pressed by the arcuate spring 41a into engagement with the socket member for frictionally retaining the plug within the socket.

On pushing the plug member inward the inner end portion of the supporting ring 31 contacts with the side of the arcuate spring 41a to close the circuit. Instead of having the ring 31 engage the spring 41a on its thin edge where the same is fairly rigid, it will be found more desirable to provide small inwardly bent portions 47 on the spring 41a, which portions constitute slightly yieldable abutments for engagement with the end of the supporting tube 31.

These slightly yieldable portions are shown also in Fig. 8.

In Fig. 9 is shown a simple and preferred construction embodying the mounting of the center contact 18 without the use of a large insulating washer 23. From the drawings it will be seen that the mica washer 50 is located within the dished or cupped portion of the steel washer 51 to insulate the lighting terminal from the socket member. The mica washer 52 on the front of the steel washer 51 also insulates the center contact from the steel washer and socket on the front side. The steel washer is held in position

in the socket by the bead 22 as is the insulating washer in Figs. 1 and 2.

When the heater is left in a circuit closed or on position there is danger of the "phenolite" washer 23 being affected by the heat and for this reason the construction of Fig. 9 is preferred for all of the foregoing modifications including the thermostatically controlled construction.

The main body portion of the plug may be of a phenolic condensation product or other suitable insulating material.

The large perforations 26 in the socket are at least two in number and preferably located on diametrically opposite sides, namely the top and bottom of the socket where convenient, in order to allow cooling currents of air to be passed substantially transversely through the socket, although when this is not convenient, the number of such large perforations 26 may be increased to three or more.

The contact ring 32 is preferably located radially inward from the surface of the plug so as to be well out of contact with the socket when the main body portion of the plug is in an off position with the circuit open. This contact ring 32 and the heater supporting tube 31 need not necessarily be splined, especially where the flange of the ring 32 which contacts with the ground abutments 38 is made thick enough or wide enough longitudinally to permit of having the periphery of this flange knurled instead of that of the heater housing.

The groove 45 in the plug is preferably provided with a metal wear resisting ring in its vertical wall which is engaged by the hook 46 of the thermostatic latch 44. It will be understood that when the spring pushes the main body portion of the plug outwardly to an open circuit position that the heater preferably remains in contact with the center terminal 18 of the socket.

The construction shown in Fig. 9 is of advantage in providing good dissipation of heat transferred to the center contact 18 from the heater.

From Figs. 1 and 7 it will be apparent that when the circuit is closed the helical spring will not be fully compressed, with the result that no greater than spring pressure is ever placed upon the central contacts 28.

I claim:

1. A cigar lighter comprising a stationary member, a removable member, a heater on the removable member, said stationary member comprising a metal tube having a contact therein insulated from the tube and mounted on a washer, said contact being dished toward the heater to receive the heater rim within at least a portion of its outwardly inclined edges, a rivet securing said contact to said washer on which it is mounted, the bottom of said contact being stepped to space a substantial part of the bottom of said contact from the washer to allow cooling air currents to pass between the washer and spaced part of the bottom of said contacts, said tube being provided with perforations to allow the passage of air currents through the tube and around said contact.

2. A cigar lighter comprising a stationary member, a removable member, a heater on the removable member, said stationary member comprising a metal tube having a contact therein insulated from the tube and mounted on a washer, said contact being dished toward the heater to receive the heater rim within at least a portion of its outwardly inclined edges, a rivet securing

said contact to said washer on which it is mounted, the bottom of said contact being stepped to space a substantial part of the bottom of said contact from the washer to allow cooling currents of air to pass between the washer and spaced part of the bottom of said contact, said tube being provided with perforations to allow the passage of air currents through the tube and around said contact, the edge portion of said contact being notched to provide spaced pairs of contacting portions, one of said pairs being at least slightly yieldable and the other of said pairs being less yieldable.

3. A cigar lighter comprising socket and plug members, one of which is stationary and the other removable, a heater on the removable member, means for frictionally maintaining the plug and socket members engaged, at least one of said members being of metal, said friction means comprising a tongue stamped out of the metal member for cooperation with the surface of the other member along which said relative movement between the members occurs, and the sides of said tongue diverging from its tip to stiffen the tongue, and the surface of the metal member containing the tongue being rounded whereby at least the base of the tongue is also rounded and is of greater angular extent than its tip to additionally stiffen the tongue.

4. A cigar lighter comprising a socket and removable plug, said socket having a pair of contacts, one in the base and the other located intermediate the base and the outer end of the socket, said plug including a handle portion and a heater unit, said heater unit including a circular contact member engaging the base contact of the socket and surrounding a heated member which is adapted to be brought to incandescence, longitudinally extending walls attached to said contact member and projecting on the side thereof opposite said heated member, a ring slidable on said longitudinally extending walls, said ring being adapted for engagement with the intermediate socket contact, a spring within said plug cooperating with the body of the plug and with said longitudinally extending walls, a friction device for holding the plug within the socket, the circuit through said heated member being closed on distortion of the spring due to the plug being moved inwardly, with the contact member held against movement by the base contact of the socket, for engagement between said ring and intermediate socket contact.

5. A cigar lighter comprising a socket and removable plug, said socket having a pair of contacts, one in the base and the other located intermediate the base and the outer end of the socket, said plug including a handle portion and a heater unit, said heater unit including a contact member engaging the base contact of the socket and surrounding a heated member which is adapted to be brought to incandescence, longitudinally extending walls attached to said contact member and projecting on the side thereof opposite said heated member, a ring slidable on said longitudinally extending walls, said ring being adapted for engagement with the intermediate socket contact, a spring within said plug cooperating with the body of the plug and with said longitudinally extending walls, the circuit through the heated member being closed by engagement between said ring and intermediate socket contact in advance of full distortion of said spring so that no more than the pressure due to said spring

may ever be applied to the base contact of the socket.

6. A cigar lighter comprising a socket and removable plug member, said socket having a contact in the base and another projecting radially inward intermediate the base and front end of the socket, said plug including a body of insulating material, a handle portion and a heater unit, said heater unit having a contact member for engagement with the base contact of said socket, a heated member adapted to be brought to incandescence within said contact member, an annular member secured to the insulating body of said plug, another annular member slidable within the first mentioned annular member, clamping means extending through said contact member and at least one of said annular members for securing them together, one of said annular members being adapted to engage the intermediate socket contact, and a spring between said annular members adapted to normally maintain the circuit through the heated member open and at least one of the socket contacts disengaged from its cooperative plug contact, the circuit through said heated member being closed on inward movement of the plug within the socket and distortion of said spring held against the plug contact member engaging the base contact of the socket and the annular member engaging said intermediate socket contact.

7. As an article of manufacture a removable plug member, adapted to be inserted and supported in a socket having a contact in the base and another projecting inward intermediate the base and front end of the socket, said plug including a body of insulating material, a handle portion and a heater unit, said heater unit having a cup-shaped member for engagement with the base contact of said socket, a resistance wire adapted to be brought to incandescence within said cup-shaped member, an annular member secured to the insulating body of said plug, another annular member slidable within the first mentioned annular member, clamping means extending through said cup-shaped member and at least one of said annular members for securing them together, one of said annular members being adapted to engage the intermediate socket contact, and a spring between said annular members adapted to normally maintain the circuit through the resistance wire open and at least one of the socket contacts disengaged from its cooperative plug contact, the circuit through said resistance wire being closed on inward movement of the plug within the socket and distortion of said spring held indirectly against one of the socket contacts, and one of said annular members being provided with a longitudinal rib for engagement with the other annular member.

8. A plug member for a cigar lighter adapted to be inserted in a socket having a contact in the base and another projecting inward intermediate the base and front end of the socket, said plug including a body of insulating material, a handle portion and a heater unit, said heater unit having a circular contact member for engagement with the base contact of said socket, a heated member adapted to be brought to incandescence within said contact member, an annular member secured to the insulating body of said plug, another annular member slidable within the first mentioned annular member, clamping means extending through said contact member and at least one of said annular members for securing them together, one of said annular members being

adapted to engage the intermediate socket contact, and a spring between said annular members adapted to normally maintain the circuit through the heated member open and the projecting socket contact disengaged from its cooperative plug contact, the circuit through said heated member being closed on inward movement of the plug within the socket and distortion of said spring held indirectly against one of the socket contacts, said spring being electrically and thermally insulated at each of its ends from all other electrically conductive and heated elements.

9. A cigar lighter plug member adapted to be inserted in a socket having a contact in the base and another projecting inward intermediate the base and front end of the socket, said plug including a body of insulating material, a handle portion and a heater unit, said heater unit having a circular contact member for engagement with the base contact of said socket, a heated member adapted to be brought to incandescence within said contact member, an annular member secured to the insulating body of said plug, another annular member slidable within the first mentioned annular member, clamping means extending through said contact member and at least one of said annular members for securing them together, one of said annular members being adapted to engage the intermediate socket contact, and a spring between said annular members adapted to normally maintain the circuit through the heated member open and at least one of the socket contacts disengaged from its cooperative plug contact, the circuit through said heated member being closed on inward movement of the plug within the socket and distortion of said spring held indirectly against one of the socket contacts, one of said annular members being provided with a longitudinal rib for engagement with the other annular member whereby both of said socket contacts are adapted to be cleaned by relative rotation between said plug and socket.

10. A cigar lighter comprising a socket and removable plug member, said socket having a contact in the base and another projecting radially inward intermediate the base and front end of the socket, said plug including a body of insulating material, a handle portion and a heater unit, said heater unit having a cup-shaped member for engagement with the base contact of said socket, a coil of resistance wire adapted to be brought to incandescence within said cup-shaped member, an annular member secured to the insulating body of said plug, another annular member slidable within the first mentioned annular member, clamping means extending through said cup-shaped member and at least one of said annular members for securing them together, one of said annular members being adapted to engage the intermediate socket contact, and a spring between said annular members adapted to normally maintain the circuit through the resistance wire open and at least one of the socket contacts disengaged from its cooperative plug contact, the circuit through said resistance wire being closed on inward movement of the plug within the socket and distortion of said spring against one of the socket contacts, the base contact of the socket being at least slightly yieldable and the intermediate socket contact being substantially rigid and shaped for butt engagement with an annular member of the plug.

11. A cigar lighter comprising a stationary member and a removable member having an insulating body, a pair of contacts in said station-

ary member, one in the base and the other intermediate the base and the outer end thereof, said removable member being slidable along the stationary member and having a pair of contacts in rear of the insulating body of said removable member and radially inward of the outer surface of said insulating body and adapted for engagement with said contacts in the stationary member, a spring within said removable member adapted to be distorted when the removable member is moved inwardly along said stationary member to close the circuit through a heater carried by the removable member, said spring being adapted on release of pressure holding said removable member to slide the body of the removable member outwardly and separate the intermediate contact of the stationary member from its cooperative contact on the removable member by spring pressure exerted through the contact of the removable member which cooperates with the contact in the base of the stationary member as an abutment.

12. A cigar lighter comprising a stationary member, a removable member, a pair of contacts in said stationary member, one in the base and the other intermediate the base and the other end of the stationary member, said removable member being adapted to be slid along said stationary member to close a circuit through a pair of contacts carried by the removable member at the rear end portion thereof, one of said removable member contacts being at its inner end portion, an annular member secured to the body of said removable member, another annular member slidable within the first annular member, one of said annular members constituting another contact for said removable member and being adapted for engagement with the intermediate contact of said stationary member, clamping means passing through said end contact member and the second mentioned annular member for securing said end contact member and both of said annular members together as a unit, a spring between said annular members adapted to be distorted when said removable member is moved along the stationary member by engagement between a contact of the removable member and one of the contacts of the stationary member as an abutment, a heated member carried within the end contact member, the spring being adapted on release of pressure upon the removable member to slide said removable member forwardly and separate the contact of the stationary member which does not act as an abutment from its cooperative contact on the removable member.

13. A cigar lighter plug member adapted to be inserted in a socket having contacts, one in the base of the socket, said plug including a body of insulating material, a handle, and a heater unit on the rear end portion of the plug for cooperation with the socket contacts, contacts carried by said plug and a combined friction device and current conductor carried by the plug holding the plug in engagement with at least one of the socket contacts, said friction device including a spring within the body of the plug and a button extending through the body of the plug and pressed outward by the spring into cooperation with the inner surface of the socket.

14. A heating unit for a cigar lighter comprising a circular contact member, a heated member supported therein, a tubular member substantially coaxially secured to said circular contact member and extending longitudinally on the side thereof opposite to the heated member, a

radial flange on said tubular member, another tubular member slidable with respect to the first mentioned tubular member at least in part between said radial flange and said circular contact member with the body portions of both tubular members substantially contiguous one another to provide a guiding surface for their relative movement, a radial contact flange on the second mentioned tubular member, axial securing means for holding the first mentioned tubular member to said circular contact member, the outer surface of the body portion of the outer one of said tubular members being provided with screw threads for attaching the unit to a support.

15. A heating unit for a cigar lighter comprising a circular contact member, a heated member supported therein, a tubular member substantially coaxially secured to said circular contact member and extending longitudinally on the side thereof opposite to the heated member, a radial flange on said tubular member, another tubular member slidable with respect to the first mentioned tubular member at least in part between said radial flange and said circular contact member with the body portions of both tubular members substantially contiguous one another to provide a guiding surface for their relative movement, a radial contact flange on the second mentioned tubular member, axial securing means for holding the first mentioned tubular member to said circular contact member, and a spring within said tubular members tending to move the second mentioned tubular member toward one position of its relative travel with respect to the first mentioned tubular member.

16. A cigar lighter comprising a removable plug, for insertion in a socket having a contact in the base insulated therefrom and another contact constituted by a portion of the socket forward of the base, said plug having an insulating body portion with a handle on the forward part and a heater unit carried at the rear of said body portion, said heater unit including a contact member for engaging the base contact of the socket and surrounding a heated member which is adapted to be brought to incandescence, a conducting member secured to but insulated from said contact member and extending forwardly thereof, a combined friction means and contact for holding the plug within the socket and for carrying current between the socket and said conducting member and including a metal plunger radially extending through a wall of the insulating plug body, spring means urging said plunger radially outward, a contact connected with said plunger and another contact slidable with said conducting member and heating unit relatively to the plug body, a spring cooperating between said contacts to maintain them longitudinally spaced apart and the plug body in an open circuit position, said spring being strong enough so that upon release of the plug body when the spring is compressed the spring is capable of sliding the plug body against the action of said friction and spring means, said spring being biased between the contact member and the insulating body portion of said plug for sliding the insulating plug body forwardly to an open circuit position.

17. A cigar lighter comprising a removable plug for insertion in a socket having a base contact and another contact forward of the base, said plug having an insulating body portion with a handle

at the forward part and a heated unit carried at the rear of said body portion and slidable relatively thereto, a conducting member fixed to said unit and extending forwardly thereof into the body of said plug, a switch contact part carried by said conducting member for movement within the plug body, a cooperative switch contact part within said plug constituted by a conductor curved transversely of the plug, the plug body being hollow to receive said switch parts, a radial plunger extending through a wall of said plug body, mounted on said transversely curved conductor and biased outwardly whereby said plunger may function as a friction device for retaining the plug within the socket and also as a current conductor between said transversely curved switch part and the forward socket contact, a spring carried by the plug body for normally maintaining said switch contacts separated, said heated unit being normally maintained in mechanical and electrical contact with the contact in the base of the socket, said spring being strong enough when compressed by inward movement of the plug body and handle in closing a circuit through the heated member to slide the insulated plug body outwardly against the action of said friction device upon release of said spring to open the heated member circuit, said friction device being sufficient to normally maintain the plug body in the socket with the heated member substantially contiguous the base contact of the socket when the socket and plug are substantially horizontal.

18. A cigar lighter comprising a socket and removable plug, said socket having a contact in the base insulated therefrom and another contact constituted by a portion of the socket forward of the base, said plug having an insulating body portion with a handle on the forward part and a heater unit carried at the rear of said body portion, said heater unit including a contact member for engaging the base contact of the socket and surrounding a heated member which is adapted to be brought to incandescence, a longitudinally extending tubular member attached to the contact member and projecting forwardly on the side thereof opposite said heated member, said tubular member being slidable with respect to the body portion of said plug, said tubular member and plug body being provided with means to prevent relative rotation between said plug and contact member whereby on rotation of the plug the contact member may be rotated relatively to the base contact of the socket for cleaning the electrical contact between said contact member and the base contact of the socket, another contact member carried by the plug and adapted to electrically engage the socket and means for frictionally holding the plug within the socket, a spring carried by the plug and adapted to normally maintain a circuit for the heated member open, said spring being compressible on inward movement of the insulating body portion of the plug to close a circuit for said heated member and said spring cooperating with the body portion of said plug and with the base contact of the socket as an abutment whereby on release of the spring when compressed it is strong enough to bodily slide the insulating body portion of the plug against the action of said friction means to an open circuit position for said plug.

DISCLAIMER

2,060,783.—*Philip E. Ashton*, Meriden, Conn. CIGAR LIGHTER. Patent dated November 17, 1936. Disclaimer filed September 3, 1940, by the assignee, *The Cuno Engineering Corporation*.

Hereby enters this disclaimer to claims 6, 12, 13, 14, 15, 16, and 18 of said Letters Patent.

[*Official Gazette October 8, 1940.*]

June 22, 1937.

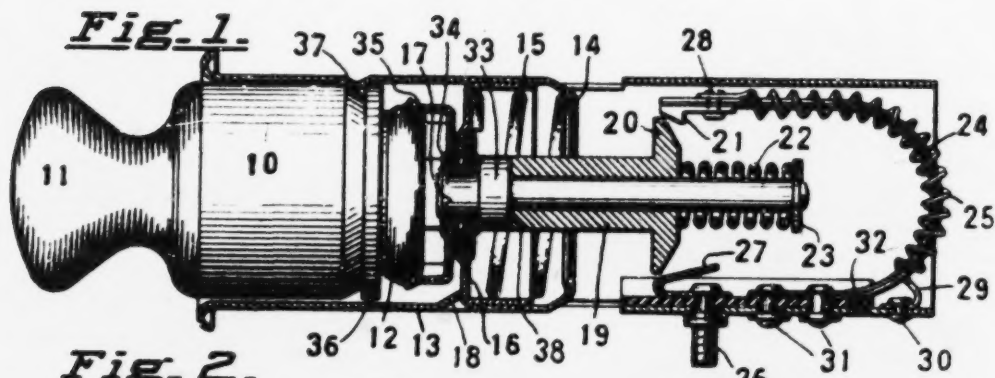
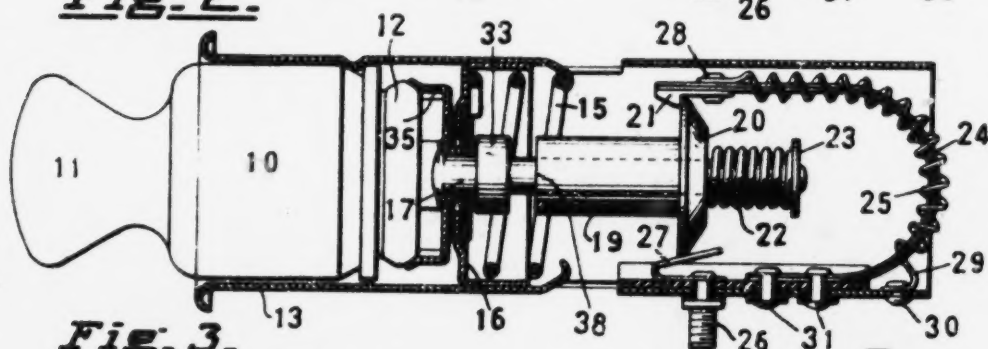
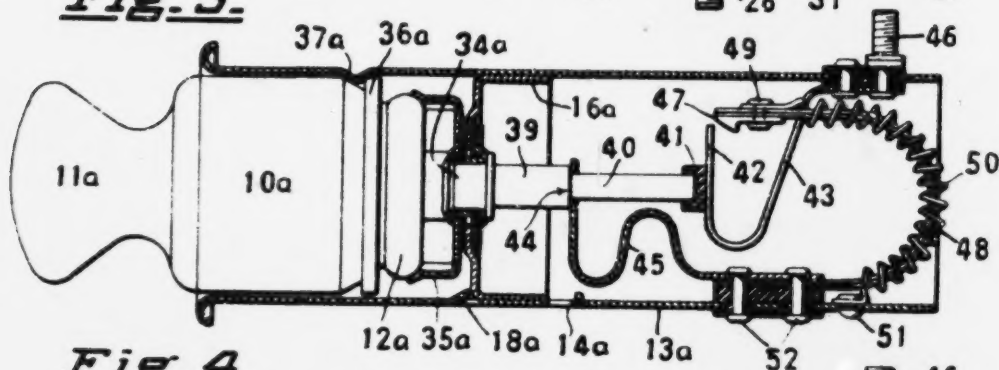
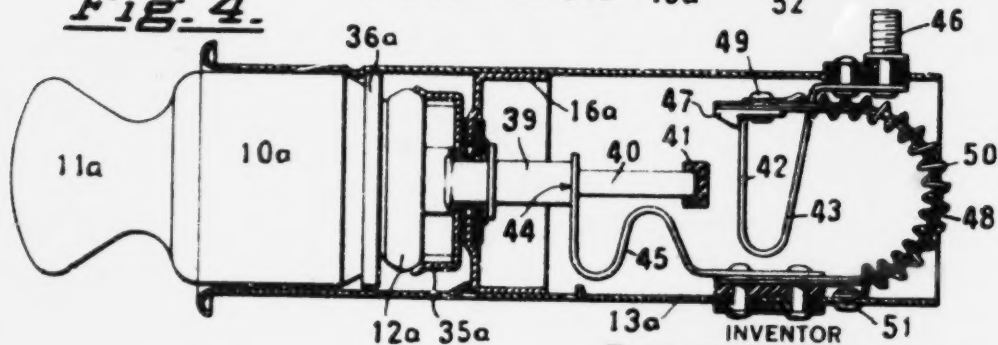
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2,084,966

ELECTRIC HEATER

Filed March 25, 1936

2 Sheets-Sheet 1

Fig. 1.Fig. 2.Fig. 3.Fig. 4.

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2,084,966
2 Sheets-Sheet 2

Fig. 5.

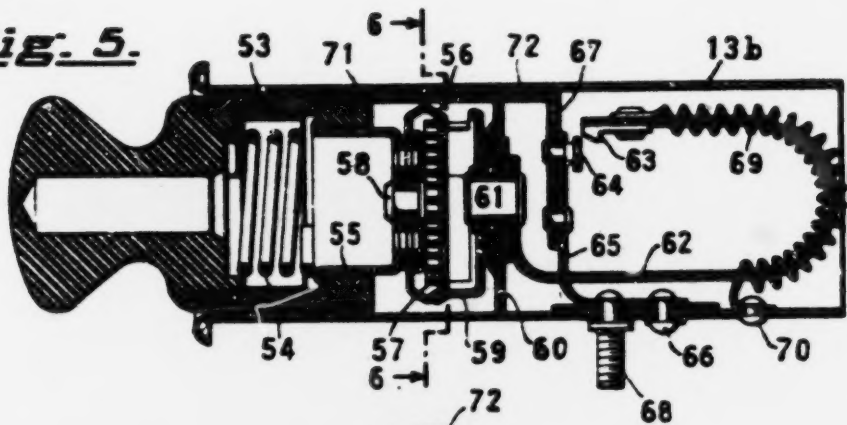


Fig. 6.

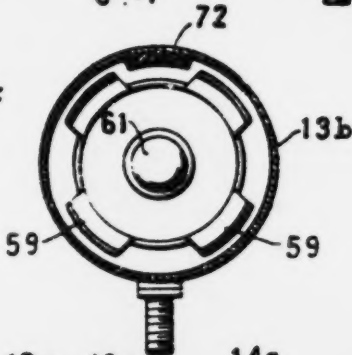
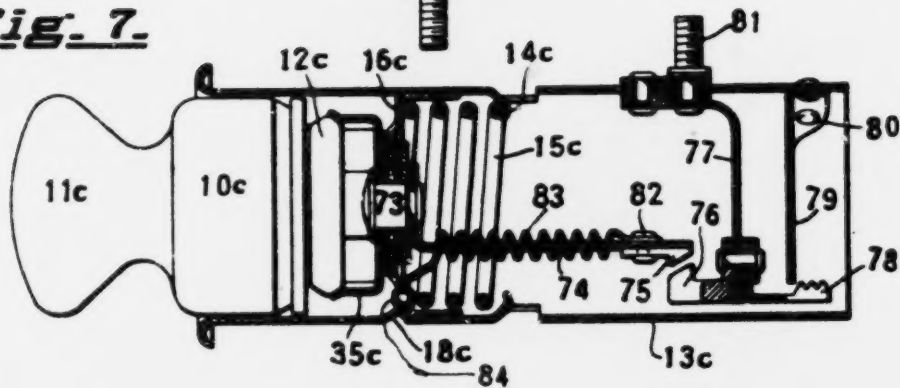


Fig. 7.



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ELECTRIC HEATER

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Application March 25, 1936, Serial No. 70,779

23 Claims. (Cl. 219—32)

My invention relates particularly to devices for lighting cigars and cigarettes. In plug-in type lighters it has been customary to provide some sort of switch which is held closed manually until the igniter is thought to be ready for use. I propose to provide means for latching a switch to close the circuit through the igniter for a predetermined time, and then automatically unlatching this switch and opening the circuit. In the preferred form this is effected by a thermostatic device heated independently of the igniter. I also provide a signal device for indicating when the circuit is broken.

One object is to provide a simple device of the well known type adapted to be installed in the instrument board of a car or other convenient place.

Referring to the drawings

Fig. 1 is a longitudinal section through one embodiment of this invention.

Fig. 2 is a detail of the switch parts of Fig. 1 with the circuit closed.

Fig. 3 is a longitudinal section of another embodiment of this invention.

Fig. 4 is a detail of the switch parts of Fig. 3 in closed position.

Fig. 5 is a longitudinal section of yet another embodiment of this invention.

Fig. 6 is a cross section on the line 6—6 of Fig. 5.

Fig. 7 is a longitudinal view partly in section of still another embodiment of the invention.

Referring to Figs. 1 and 2 the removable cigar lighter 10 is of the plug type having a handle portion 11 and carrying on its inner end a cup-shaped contact member 12 in which is located the usual spiral resistance element which is heated by electric current until it becomes incandescent. The stationary socket member 13 supports the plug in normal position. Portions of the socket are bent in as shown at 14 to constitute a stop against which the helical spring 15 contacts. The other end of the spring 15 engages the slidable sleeve 16 which shifts or slides within the socket 13, said sleeve being insulated from the central stem 17 by insulating washers shown on each side of the portion of the sleeve 16 around this stem.

Another stop 18 formed by bending in portions of the tubular socket limits outward movement of the sleeve 16 under the action of the spring 15. Slidably mounted on the central stem 17 and in electrical contact therewith is a tubular sleeve 19 having a flange at its inner end portion which constitutes a switch part 20 adapted

to be engaged and held by the latch 21 which is released by a thermostatic element. A spring 22 cooperates with the sleeve and with a washer 23 at the inner end of the stem 17. The bimetallic strip or thermostatic element 24 is of general U-shape as indicated and is wound throughout a substantial portion of its length by a resistance wire 25 which is adapted to heat the bimetallic strip 24 a desired amount to release and open the switch parts 20 and 21. The supporting socket 13 is grounded and current is supplied to the ungrounded terminal 26 to which is secured the flexible spring contact member 27 so that upon closing the switch, current passes through the switch parts 20 and 21 to the rivet 28 to which one end of the heating wire 25 is connected. The other end of the heating wire passes through the connected lead 29 to the rivet 30 which is grounded to the socket. The bimetallic strip 24 is insulated from the socket and held therein by the rivets 31 which clamp one end of the strip against the insulating material 32. One portion of the stem 17 is enlarged at 33 to constitute a stop against which the spring 22 presses the sleeve 16.

The forward portion of the stem 17 is riveted over and held within the tubular rivet 34 which supports the stem 17 and holds it in electrical contact with the abutment contact 35. This abutment contact is of the usual shape adapted for engagement with the outer or peripheral portion of the cup-shaped member 12. One end of the spiral resistance wire is secured to the cup-shaped member 12, according to the customary practice in this art, and the opposite end of the resistance wire is fastened to a central rivet (not shown) but which extends through the cup member and is insulated therefrom but in electrical contact with the other terminal 36 of the removable member which is adapted to contact with the inner surface of the socket. To insure the contact member 36 being in good electrical engagement with the socket it is customary to have a portion of the socket stamped out as a spring finger as is described, for example, in my copending application Serial Number 747,377, filed October 8, 1934, for Cigar lighter. The end portion 37 of such a spring finger is given a curved form as indicated in the drawings so that the contact member 36 may not only be engaged but also biased and held in a position with the cup-shaped contact member 12 in contact with the abutment contact 35.

Normally the removable plug is carried in an open circuit position with the parts in the position

shown in Fig. 1. To heat the lighter the plug 10 is pushed inwardly into the socket compressing the spring 15 until the switch member 20 is engaged and held in contact with spring contact 27 by the thermostatic latch or switch element 21 when the removable plug may then be manually released.

Upon its release the spring 15 slides the sleeve 16 to the left in Fig. 1 and moves the plug member outwardly until the sleeve 16 is engaged by its stops 18, at the same time compressing spring 22 which is possessed of less strength than the spring 15, to the position shown in Fig. 2. Upon closing the switch parts 20 and 21 current is supplied for heating both the bimetallic strip 24 and the spiral resistance wire within the cup shaped member 12. The current for heating the bimetallic strip 24 passes from the terminal 26 through the contact spring 27, switch member 20, thermostatic latch 21 through the end portion of the thermostatic strip to the rivet 28, thence through the heating coil 29 to the ground connection at 30. The path of the current for heating the cigar lighter is from the terminal 26, through the spring contact 27, through the sleeve 16, rivet 34, abutment contact 35 to the rim of the cup member 12, thence through the spiral resistance wire to the usual central rivet which is insulated from the cup member 12 but contacted with the plug terminal 36 and thence to the grounded socket through the spring finger 37. The resistance wire 25 is so designed that it will heat the bimetallic strip 24 sufficiently to release the switch members 20 and 21 after a predetermined interval of time during which the spiral resistance wire of the cigar lighter has been heated. When the bimetallic strip 24 is heated its free end portion 21 moves upwardly in Fig. 1, until the switch element 20 is released.

Upon release of the switch element 20 the spring 22 pushes the sleeve 16 forwardly until its forward end portion 38 abuts the enlarged portion 39 of the stem 17 giving out sound enough on impact to constitute an audible signal of the cigar lighter being in readiness for use so that the user may withdraw the plug 10 from the socket and light his cigar or cigarette. After use the plug is put back in the socket into the position shown in Fig. 1. The spring finger 37 and its bent end engage the plug contact 36 but do not offer as much resistance to inward movement of the plug as does the spring 15 so that upon inserting the plug in the socket the resistance offered by the spring finger 37 is small and noticeably less than that offered by the spring 15 during movement of the sleeve 16. The cup-shaped member 12 is maintained in engagement with the abutment contact 35 and after manual release of the plug with the switch members 20 and 21 closed, the bent end 37 of the spring finger prevents the plug from being moved out of the socket more than the desired amount and assists in maintaining the circuit closed through the abutment contact 35 and the cup-shaped member 12.

In Figs. 3 and 4 the plug 10a has the handle portion 11a, cup-shaped contact member 12a held as mentioned before within the socket 13a in contact with the abutment 35a and held in such contact by the bent end 37a of the spring finger 37a engaging the contact 36a.

As was the case in Figs. 1 and 2 the sleeve 16a is shiftable between stops 18a and 18a, said sleeve 16a supporting a central stem 39 from which the sleeve is insulated. The rear end portion of the stem is reduced as shown at 40 and carries an

insulating spacer member 41 with which the spring switch arm 42 is adapted to contact, said switch arm being carried by the spring arm conductor 43. A shoulder 44 is provided on the central stem 39 for engagement with the end portion of a leaf spring 45. One terminal 46 is insulated from the tubular socket 13a, but in contact with the spring 43 carrying the switch arm 42. The cooperative switch member 47 is shaped to latch the spring switch member 42. Current for heating the bimetallic thermostatic strip 48 is supplied through the heating coil 50, one end of which is in contact with the rivet 49 and the other end of which is grounded to the socket at 51. The thermostatic element is insulated from the socket and held in position by the rivets 52 which are likewise insulated from the socket, such rivets holding both the thermostatic element and the leaf spring 45 in contact. Unlike the embodiment illustrated in Figs. 1 and 2, the device of Figs. 3 and 4 has the current for the cigar lighter passed through the bimetallic element 48 but this thermostatic element is of such low resistance that this current for the cigar lighter does not alone heat the bimetallic strip enough to release the switch elements 42 and 47.

The operation of the device of Figs. 3 and 4 is substantially like that of the embodiment illustrated in Figs. 1 and 2. Upon pushing in the plug 10a the sleeve 16a is caused to move to the right against the action of the spring 45 until the switch member 42 is engaged by the thermostatic latch 47. Upon the release of the plug the spring 45 slides the sleeve 16a and the plug to the left until the sleeve is engaged by its stop 18a and the plug is in contact with the bent end 37a of the spring finger which biases the plug member into contact with the abutment 35a. When the switch members 42 and 47 are closed, current for heating the thermostat passes from the terminal 46 through the spring 43, switch members 42 and 47 to the rivet 49, and thence through the resistance wire 50 to the grounded contact 51. Current for the cigar lighter passes from the terminal 46 through the spring 43, switch elements 42 and 47, through the bimetallic strip 48 and spring 45 to the central stem 39, thence through the rivet 34a to the abutment contacts 35a, cup-shaped member 12a, thence through the spiral resistance wire in the usual manner to a central rivet which is connected to the plug contact 36a and the spring finger 37a. Upon release of the switch members 42 and 47, spring 43 causes the switch element 42 to be moved to the left into engagement with the insulating spacer member 41. An impingement of the switch part 42 upon the spacer 41 constitutes an audible signal that the thermostatic element has opened the circuit through the cigar lighter and that the same is ready for use.

The heating wires which are wound around the thermostatic or bimetallic elements in Figs. 1 to 4 must be insulated from the bimetallic strip enough to prevent the current short circuiting through this strip and yet not be thermally insulated from the strip because it is the heat from the resistance wires 25 and 50 which serve to heat up the bimetallic strip to an amount sufficient for it to unlatch the switch element held thereby.

In Figs. 5 and 6 is illustrated another embodiment of this invention. The plug 53 is provided with a spring 54 engaging the plug and a sleeve 55 carrying the cup-shaped contact member 56 at the rear end thereof. The usual spiral

heater wire 57 is in contact with the cup-shaped member 54 and also with a central rivet 58 which is insulated from the base of the cup-shaped member 54 by the insulating washers illustrated. The abutment contacts 59 are supported by but insulated from a stationary wall 60 within the socket which may be welded or otherwise held in place. As shown in the drawings, insulating washers on each side of the stationary wall 60 insulate this wall from a central rivet 61 which clamps the abutment contact as well as the end of a thermostatic element 62 against the wall 60. The other end portion of the bimetallic strip 62 is provided with a latching switch member 63 for engagement with the head of the switch member 64 carried by the spring arm 65 and supported by but insulated from the tubular socket member by the insulated rivets 66.

A strip of insulating material 67 is carried by the spring arm 65 and one terminal 68 is connected with the spring arm 65 as illustrated. The wire 69 heats the bimetallic strip, being connected at one end to the rivet adjacent the latch 63 and at its other end to the grounded rivets 70. In one preferred construction the contact members 38, 38a, or 71 are made smaller in diameter than the insulating plug member by which it is carried so that it can only make contact with the grounded socket tube through the spring finger 37 or 37a. In this way the circuit through the lighter can only be completed when the plug member has been pressed inward to close the switch and then released allowing it to resume its normal carrying position thus preventing any possibility of continuous heating of the heater wire on the plug member which could occur with the construction shown in Figures 1 and 2 or the intermittent heating that could occur with the construction in Figs. 3, 4, 5, and 6 where the thermostatic switch would continue to make and break the circuit as long as the plug was held in its extreme inward position and the grounded plug contact were in contact with the socket tube. The spring finger also provides a friction means of maintaining the plug in the socket but other frictional means well known in the art may be used. The grounded plug contact is attached to the insulating plug, for example, by means such as screw threads, moulding as an insert, etc. In another construction the plug body 63 and the grounded plug contact 71 may be formed in one piece from a metallic shell.

A strip 72 which may be of insulating material is shiftable to the right in Fig. 5 by the plug and this strip is movable to the left upon release of the switch elements 63 and 64 by means of the spring arm 65.

With the parts in the normal position indicated in Fig. 5 no current is being supplied to the cigar lighter. Upon moving the plug 63 further into the socket the cup-shaped member 54 is held substantially stationary against the abutment contacts 59 and likewise the sleeve 55 is held substantially stationary but on this inward movement of the plug body the spring 54 is compressed. The inward movement of the plug shifts the strip 72 to the right in Fig. 5 causing the switch elements 63 and 64 to become engaged.

When so engaged current is supplied to the cigar lighter heater unit from the terminal 68 through the spring arm 65, switch elements 64 and 63, bimetallic strip 62, rivet 61, abutment contacts 59 to the cup-shaped contact member 54, thence through the spiral resistance wire to the central rivet 58 which is in contact with the

sleeve 55. The socket contact 71 slides with respect to the sleeve 55 so the current passes from the sleeve 55 through the contact 71 to the socket 13b. Current for heating the bimetallic element 62 passes from the terminal 68 to the spring arm 65, the switch elements 64 and 63 to the rivet shown adjacent the latching end 63 of the thermostatic strip and from this rivet through the heating wire 69 to the grounded connection 70.

Upon release of the plug after the switch parts 64 and 63 have been engaged, the spring 54 pushes the main body portion of the plug outwardly inasmuch as the spring 54 presses indirectly upon the stationary abutment contacts 59 by means of the sleeve 55 and the cup-shaped member 54. Upon release of the switch parts 64 and 63 after the thermostatic strip has been heated to the desired amount, the spring arm 65 moves to the left under its inherent resiliency carrying the insulating strip 67 and pushing the strip 72 to the left until it assumes the position shown in Fig. 5, making an audible signal as it strikes the contact 71.

The embodiment illustrated in Fig. 7 contemplates the usual plug 18c having the handle portion 11c, cup-shaped contact 12c for engagement with the abutment contacts 38c.

The abutment contacts are carried by but insulated from a sleeve 16c within which is a coil spring 15c, one end of the spring being in contact with bent-in stops 14c and the other end of the spring in contact with the slidable sleeve 16c. A stop 18c limits outward movement of the sleeve 16c. The central rivet 73 clamps the abutment contacts 38c against the sleeve 16c and also against a bimetallic thermostatic strip 74 which is carried by the sleeve 16c. The rear end portion of the thermostatic strip 74 carries a latching member 75 for cooperation with the switch parts 76 carried by the spring arm 77 which is secured to but insulated from the socket as indicated.

Also carried by the spring arm 77 but insulated therefrom is a rasp 78 adapted for engagement with the free end portion of a diaphragm 79 which is secured at 80 to the socket 13c. The ungrounded terminal 81 supplies current through the spring arm 77 when the switch parts 75 and 76 are closed, through the rivet 82 and thence through the heating wire 83 for the thermostatic element to the rivet 84 in the sleeve 16c, said sleeve being grounded and in contact with the socket 13c. When the switch parts 75 and 76 are closed, current for the cigar lighter passes from the terminal 81 through the spring arm 77, switch parts 75 and 76, through the bimetallic strip 74 to the rivet 73, abutment contacts 38c, cup-shaped member 12c and thence through the spiral resistance wire to the other plug contact and socket as was described in connection with Figs. 1 and 2.

Upon pushing the plug 18c inwardly the spring 15c is compressed and the latch 75 engages the switch element 76. Upon release of the plug the spring 15c slides the sleeve 16c and the plug outwardly or to the left to some extent flexing the spring arm 77, which possesses less strength than does the spring 15c. In moving the switch element 76 to the left in Fig. 7, the insulated rasp 78 likewise moves to the left under the influence of the spring 15c, causing the rasp teeth 78 to be moved over the diaphragm 79. Upon release of the switch parts 75 and 76 the spring arm 77 returns the switch element 76 to the position shown in Fig. 7 and in doing so some of the teeth 78

of the rasp 78 are again caused to quickly slide over the diaphragm 79 giving an audible signal and advising the operator that the cigar lighter is in readiness for use.

5 If desired the rasp may be replaced by a small hammer and the diaphragm by a gong or other device whereby percussion will give an audible signal. In another construction the rasp is not insulated from the spring arm 77 and a contact connected to a signal lamp is substituted for the diaphragm 79 so that the rasp, instead of creating an audible signal creates a visual signal by making and breaking the circuit through the signalling lamp. It will also be clear that a combined visual and audible signal can be obtained by insulating the diaphragm 79 from the socket tube, electrically connecting the rasp 78 to the spring arm 77 and allowing the diaphragm to serve both the creation of an audible signal and as a contact connected to a signal lamp so that both means of signal are available to indicate to the operator that the thermostat has broken the circuit through the cigar lighter and that it is ready to use.

25 In the device of Figs. 3, 5, and 7 the bimetallic strip is of low enough resistance so that the current passing through it to the cigar lighter does not heat up this bimetallic strip sufficiently to cause the switch parts which are latched or held thereby to be released.

30 In Figs. 1 to 7 inclusive the wire which is wound around the bimetallic strip for heating the same should be electrically insulated therefrom. If desired, this heating wire may be bare and maintained out of electrical contact with the bimetallic strip by means of an open or perforate insulating sleeve so that convection currents of air passing from the heating wire may cause the heating of the bimetallic strip to augment the direct action of the coils 25, 50, 60 or 83. Heat from the igniter coil alone, however, is not as positive nor possessed of some of the mechanical and electrical advantages present when the heater for the thermostat is independent of or in addition to the heater for the cigar or cigarette.

35 In the embodiment shown in Figs. 1 to 4 the spring fingers 37 and 37a engage the plug contact 36 and 36a only when the plug is in normal position. When the plug is pushed in to a position closing the thermostatic switch the circuit is open through the contacts 36 or 36a and 37 or 37a. In this way the circuit through the heater is not closed until after the plug has been returned to its normal position shown in Fig. 1 after the thermostatic switch has been closed. This is the preferred manner of operation for the devices of Figs. 1 to 4. In other words, the thermostatic switch does not close the circuit through the heater because at that time the heater circuit is open through the spring finger 37 or 37a being out of contact with the plug. The thermostatic switch, however, does open the heater circuit. The use of two switches in the heater circuit both of which close only after the plug has been moved inwardly and then moved outwardly by the spring, makes these forms of the invention safe against a user accidentally holding the plug in a pressed-in position.

70 Since many of the commercial cigar lighters on the market previously have required an operator to hold the plug pushed in to a circuit closing position, the present construction provides a safe way of educating the operator out of his previous habit, because no matter how

long the plug of Figs. 1 to 4 may be held in a pressed-in position closing the thermostatic switch, the heater does not have its circuit closed until after the plug has subsequently been moved outwardly so that the contact 36 or 36a may engage the spring finger 37 or 37a.

I claim:

1. A cigar lighter comprising a removable member and a stationary member for supporting said removable member, a heater carried by the removable member, a thermostatic switch carried at least in part by one of said members and adapted to be closed by movement of said removable member beyond its normal position, circuit connections for supplying electric current for said heater through said thermostatic switch, a spring carried by said removable member for cooperation with said stationary member for moving said removable member longitudinally of the stationary member after closing said switch and a second switch in the heater circuit open only when the removable member is moved inwardly beyond its normal position.

2. A cigar lighter comprising a removable member and a stationary member for supporting the removable member, circuit connections to said stationary member, contacts carried by the removable member for engaging contacts carried by the stationary member, a heater on said removable member and connected to its contacts, temperature responsive means carried by said stationary member for opening the circuit through the heater after the same has been closed, a heater contact on the inner end portion of said removable member, one of the contacts of the stationary member being an abutment for engaging said heater contact and against which said heater contact is adapted to be pressed, a switch in said heater circuit carried by the stationary member and adapted to be opened by said temperature responsive means, said switch being constructed for closure on inward movement of at least a substantial portion of said removable member, a spring cooperating with the stationary and removable members and carried by one of said members for sliding said removable member outwardly after closing said switch and upon manual release of the removable member, detent means for holding said heater contact in engagement with said abutment, one of the contacts carried by said removable member being in front of and insulated from said heater contact but in electrical circuit therewith through the heater, said detent means serving as a contact whereby the heater circuit may be completed only when said detent means is in engagement with said contact carried by the removable member in front of the heater contact.

3. A cigar lighter comprising a removable member and a stationary member for supporting the removable member, circuit connections to said stationary member, contacts carried by the removable member for engaging contacts carried by the stationary member, a heater on said removable member and connected to its contacts, temperature responsive means carried by said stationary member and constructed for opening the circuit through the heater after the same has been closed, a heater contact on the inner end portion of said removable member, one of the contacts of the stationary member being an abutment for engaging said heater contact and against which said heater contact is adapted to be pressed, a switch in the heater circuit, carried by the stationary member and adapted to be opened by

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said temperature responsive means, said switch being closed on inward movement of at least a substantial portion of said removable member, a spring cooperating with the stationary and removable members and carried by one of said members for sliding said removable member outwardly after closing said switch and upon manual release of the removable member, means for holding said heater contact in engagement with said abutment, one of the contacts carried by said removable member being in front of and insulated from said heater contact but in electrical circuit therewith through the heater, and a spring cooperating with said switch parts and carried by said stationary member and of such strength as to be adapted for opening said switch when the switch is released by said temperature responsive means without disengaging the heater contact from said abutment contact.

4. A cigar lighter comprising a removable member and a stationary member for supporting the removable member, circuit connections to said stationary member, contacts carried by the removable member for engaging contacts carried by the stationary member, a heater on said removable member and connected to its contacts, temperature responsive means carried by said stationary member for opening the circuit through the heater, a heater contact on the inner end portion of said removable member, one of the contacts of the stationary member being an abutment for engaging a portion of said heater contact and against which said heater contact is adapted to be pressed, a switch carried by the stationary member and adapted to be opened by said temperature responsive means, said switch being closed on inward movement of at least a substantial portion of said removable member, a spring carried by one of said members for sliding said removable member outwardly after closing said switch and upon manual release of the removable member, means for holding said heater contact in engagement with said abutment, another contact carried by said removable member in front of and insulated from said heater contact but in electrical circuit therewith through the heater, a spring carried by said stationary member for opening said switch when the switch is released by said temperature responsive means without disengaging the heater contact from said abutment contact, a support for said abutment contact slidably mounted in said stationary member, and stops for limiting the movement of said abutment contact and its support, said spring for sliding the removable member outwardly being in cooperation with said stationary member and said support for the abutment contact.

5. A cigar lighter comprising a removable member and a stationary member for supporting the removable member, circuit connections to said stationary member, contacts carried by the removable member for engaging contacts carried by the stationary member, a heater on said removable member and connected to its contacts, temperature responsive means carried by said stationary member for opening the circuit through the heater, a heater contact on the inner end portion of said removable member, one of the contacts of the stationary member being an abutment for engaging a portion of said heater contact and against which said heater contact is adapted to be pressed, a switch carried by the stationary member and adapted to be opened by said temperature responsive means, said switch being closed on inward movement of at least a substantial portion

of said removable member, a spring carried by one of said members for sliding said removable member outwardly after closing said switch and upon manual release of the removable member, means for holding said heater contact in engagement with said abutment, another contact carried by said removable member in front of and insulated from said heater contact but in electrical circuit therewith through the heater, a spring carried by said stationary member for opening said switch when the switch is released by said temperature responsive means without disengaging the heater contact from said abutment contact, a support for said abutment contact slidably mounted in said stationary member, and stops for limiting the movement of said abutment contact and its support, said spring for sliding the removable member outwardly being in cooperation with said stationary member and said support for the abutment contact, said temperature responsive switch having a shiftable element carried by said support for the abutment contact and movable relative thereto, said spring for actuating said switch cooperating with said shiftable switch element and with said support for the abutment contact, the first mentioned spring being stronger than the second mentioned spring.

6. A cigar lighter comprising a removable member and a stationary member for supporting the removable member, circuit connections to said stationary member, contacts carried by the removable member for engaging contacts carried by the stationary member, a heater on said removable member and connected to its contacts, temperature responsive means carried by said stationary member for opening the circuit through the heater, a heater contact on the inner end portion of said removable member, one of the contacts of the stationary member being an abutment for engaging a portion of said heater contact and against which said heater contact is adapted to be pressed, a switch carried by the stationary member and adapted to be opened by said temperature responsive means, said switch being closed on inward movement of at least a substantial portion of said removable member, a spring carried by one of said members for sliding said removable member outwardly after closing said switch and upon manual release of the removable member, means for holding said heater contact in engagement with said abutment, another contact carried by said removable member in front of and insulated from said heater contact but in electrical circuit therewith through the heater, a spring carried by said stationary member for opening said switch when the switch is released by said temperature responsive means, without disengaging the heater contact from said abutment contact, a support for said abutment contact slidably mounted in said stationary member, and stops for limiting the movement of said abutment contact and its support, said spring for sliding the removable member outwardly being in cooperation with said stationary member and said support for the abutment contact, said temperature responsive switch having a shiftable snap element carried by said stationary member for conducting current to the heater and temperature responsive means, said snap element being carried by said second mentioned spring and said first mentioned spring being stronger than said second mentioned spring, and electrically in series therewith.

7. A cigar lighter comprising a removable

member and a stationary member for supporting the removable member, circuit connections to said stationary member, contacts carried by the removable member for engaging contacts carried by the stationary member, a heater on said removable member and connected to its contacts, temperature responsive means carried by said stationary member for opening the circuit through the heater, a heater contact on the inner end portion of said removable member, one of the contacts of the stationary member being an abutment for engaging a portion of said heater contact and against which said heater contact is adapted to be pressed, a switch carried by the stationary member and adapted to be opened by said temperature responsive means, said switch being closed on inward movement of at least a substantial portion of said removable member, a spring carried by one of said members for aliding said removable member outwardly after closing said switch and upon manual release of the removable member, means for holding said heater contact in engagement with said abutment, another contact carried by said removable member in front of and insulated from said heater contact but in electrical circuit therewith through the heater, a spring carried by said stationary member for opening said switch when the switch is released by said temperature responsive means, without disengaging the heater contact from said abutment contact, a support for said abutment contact slidably mounted in said stationary member, and stops for limiting the movement of said abutment contact and its support, said spring for aliding the removable member outwardly being in cooperation with said stationary member and said support for the abutment contact, said temperature responsive means being carried by and movable with said support for the abutment contact, and a rasp and a diaphragm both carried by the stationary member for actuation by said temperature responsive means.

4. A cigar lighter comprising a removable member and a stationary member for supporting the removable member, circuit connections to said stationary member, contacts carried by the removable member for engaging contacts carried by the stationary member, a heater on said removable member and connected to its contacts, temperature responsive means carried by said stationary member for opening the circuit through the heater, a heater contact on the inner end portion of said removable member, one of the contacts of the stationary member being an abutment for engaging a portion of said heater contact and against which said heater contact is adapted to be pressed, a switch carried by the stationary member and adapted to be opened by said temperature responsive means, said switch being closed on inward movement of at least a substantial portion of said removable member, a spring cooperating with said stationary and removable members and carried by one of said members for aliding said removable member outwardly after closing said switch and upon manual release of the removable member, means for holding said heater contact in engagement with said abutment, another contact carried by said removable member in front of and insulated from said heater contact but in electrical circuit therewith through the heater and a spring carried by said stationary member and of such strength as to be adapted for opening said switch when the switch is released by

said temperature responsive means without disengaging the heater contact from said abutment contact, said first mentioned spring being carried by said removable member and said abutment being mounted in a fixed support in said stationary member but insulated therefrom, said temperature responsive means at one end thereof being also supported by said fixed support, and a shiftable element between said removable element and switch, adapted to be moved in one direction by said removable member and in the opposite direction by said second mentioned spring.

9. A cigar lighter comprising a stationary member and a removable member carried by said stationary member, a heater on said removable member, contacts on the removable member connected to said heater and normally engaged with contacts on the stationary member, a thermostatic switch on one of said members, said switch being constructed to be closed on inward movement of said removable member, a spring cooperating with said stationary and removable members for moving said removable member outwardly upon manual release of said removable member and a second spring cooperating with said switch parts and of such strength as to be adapted to open said switch without substantially affecting the position of said removable member.

10. A cigar lighter comprising a stationary member and a removable member carried by said stationary member, a heater on said removable member, contacts on the removable member connected to said heater and normally engaged with contacts on the stationary member, a thermostatic switch on one of said members, said switch having a member carried thereby and being closed on inward movement of said removable member, a spring for moving said removable member outwardly upon manual release of said removable member, an audible signal means, a shiftable part carried by the stationary member, and a second spring adapted to open said switch without substantially affecting the position of said removable member, said second mentioned spring causing said member carried by the switch to engage a shiftable part carried by the stationary member and actuate said audible signal means.

11. A cigar lighter comprising a removable member, a stationary member for supporting said removable member, a heated member carried by the removable member, a circuit for supplying energy to said heated member, a switch for controlling said circuit, a bimetallic strip carried by one of said members for releasing said switch, another circuit for heating said strip upon closure of said switch by movement of said removable member with respect to the stationary member, and a spring for moving said switch to open the first circuit upon its release by the action of said bimetallic strip, and another spring for moving said removable member after its movement to close said switch.

12. A cigar lighter comprising a removable plug, a socket for supporting the plug, a heated member carried by the plug, a switch carried at least in part by said socket for controlling the supply of energy to said heated member, an abutment in said socket against which the plug is adapted to be held when in said socket, a bimetallic strip extending in rear of said abutment and adapted when heated to release said switch, and spring means for sliding the plug forward.

ly after its manual release and a second spring means cooperating with said switch parts for opening said switch after its release by said strip and while said abutment and plug are in contact.

13. A cigar lighter comprising a tubular socket, a plug removably carried in said socket, a heater on the inner end portion of said plug, a transverse, sliding wall intermediate the ends of said socket, a delay action switch within the socket in rear of said transverse wall, a heater contact carried by said wall and adapted to cooperate with said heater when the same is adjacent said wall, said wall and socket being adapted to shield said switch against the transmission of heat by radiation or convection from the heater.

14. A cigar lighter comprising a stationary member, a removable member, a heater carried by said removable member, a delay action switch carried by one of said members for automatically opening an electric circuit through said heater after the same has been closed by inward movement of said removable member, an abutment on the stationary member, a spring cooperating with said abutment and with at least a substantial portion of the removable member and adapted to move at least said substantial portion of the removable member outwardly upon release of the removable member after closing said switch, and a second spring in cooperation with said switch parts and adapted to separate the parts of said switch after their release and without substantially affecting the position of said removable member, and a signal responsive to the release of said second spring from a position in which said second spring is stressed when the switch is closed.

15. A cigar lighter comprising a stationary member, a removable member carried by the stationary member, a heater carried by the removable member, a switch carried by the stationary member and adapted to be closed by movement of the removable member with respect to the stationary member, a spring for returning said removable member to its normal position after closing said switch, means for holding said switch closed, delay action means for opening said switch, and another switch closed only when the removable member is in its normal position, both of said switches being in the heater circuit, whereby current is not supplied to the heater until after the removable member has been returned to its normal position after closing the first mentioned switch.

16. A cigar lighter comprising a stationary member, a removable member adapted to be carried by said stationary member, a heated member on the removable member, two switches controlling an electric circuit for said heated member, one of them being adapted to be closed on inward movement of said removable member beyond its normal supported position, a spring cooperating with said stationary and removable members for moving said removable member outwardly upon release of the removable member, another of said switches adapted to be closed by such removable member only when the same is in its normal supported position on said stationary member, and delay action means for opening one of said switches.

17. A cigar lighter comprising a stationary member, a removable member carried by the stationary member, a heated member secured to the removable member, a switch controlling an electric circuit for said heated member and adapted

to be closed on inward movement of said removable member beyond its normal supported position, a spring cooperating with said stationary and removable members for moving said removable member outwardly upon release of the removable member, delay action means for opening said switch and the circuit through said heated member, and means for opening the circuit through the heated member during inward movement of said removable member.

18. A cigar lighter comprising a stationary member, a removable member carried by the stationary member, a heated member secured to the removable member, a switch controlling an electric circuit for said heated member and adapted to be closed on inward movement of said removable member beyond its normal supported position, a spring cooperating with said stationary and removable members for moving said removable member outwardly upon release of the removable member, delay action means for opening said switch and the circuit through said heated member, and means for opening the circuit through the heated member during inward movement of said removable member regardless of whether said switch be open or closed.

19. In a cigar lighter the combination with a stationary member, of a removable member, an igniter carried by one of said members, electric current contacts for each of the members, a switch carried by one of them in addition to said contacts, means for closing said switch on movement of the removable member from normal position with respect to the stationary member, means for returning the removable member to normal position, and a delay action means for opening the switch while the removable member is maintained in its normal position with its contacts engaged with those of the stationary member.

20. An electric lighter comprising a socket constituting a contact, a contact mounted to slide in the socket but insulated therefrom a slidable support for said contact, a rod carried by said slidable support, a spring for sliding said rod and its associated contact forwardly, a switch member slidable on said rod, a spring for moving said switch member on said rod, a latch for holding said switch member, a heater for moving said latch to release said switch member, said socket being adapted to receive an igniter with a coil and circuit contacts, one of the latter contacts being adapted to engage the socket and the other circuit contact being adapted to engage the slidable contact when the plug is in the socket.

21. In a cigar lighter the combination with a stationary member, of a removable member, an igniter carried by one of said members, electric current contacts for each of the members, a switch carried by one of them in addition to said contacts, means for closing said switch on movement of the removable member from normal position with respect to the stationary member, means for returning the removable member to normal position, and a delay action means for opening the switch while the removable member is maintained in its normal position with its contacts engaged with those of the stationary member, the circuit being opened through the igniter when the removable member is held in front or behind its normal position.

22. In a cigar lighter, a socket having two circuit contacts one of which is insulated from the other, one of the contacts constituting a latch, a plug removably supported in the socket and hav-

ing a contact normally electrically connected to one of the socket contacts and a second contact, an igniter element connected between the two contacts of the plug, two contacts electrically connected together and movable in the socket between the latch and the plug, one of which is movable with respect to the other and one of which is adapted to interlock with the latch, one of the said latter contacts being adapted to be engaged by a contact of the plug when the plug is moved inwardly in the socket, a spring moving one of the interior socket contacts to close a circuit between the plug and the socket when pressure on the plug is released and a spring moving the other interior contact to break the circuit when the latch is released and delay action means for releasing the latch to permit one of the springs to act and break the circuit.

23. In a cigar lighter the combination with a stationary member, of a removable member, an igniter carried by one of said members, electric current contacts for each of the members, a switch carried by one of them in addition to said contacts, means for closing said switch on movement of the removable member from normal position with respect to the stationary member, means for returning the removable member to normal position, and a delay action means for opening the switch while the removable member is maintained in its normal position with its contacts engaged with those of the stationary member, the delay action means being independent of and substantially unaffected by the temperature of said igniter.

PHILIP E. ASHTON.

May 17, 1938.

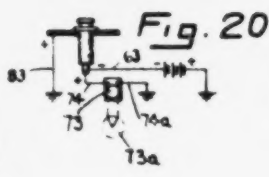
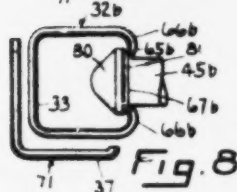
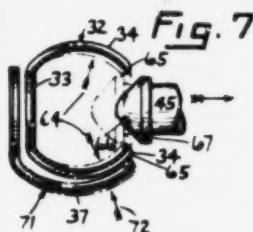
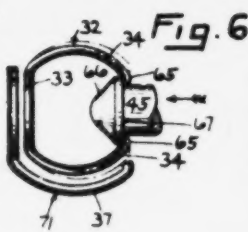
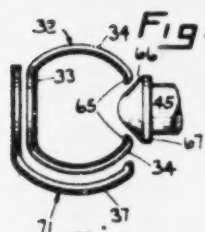
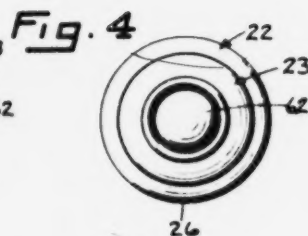
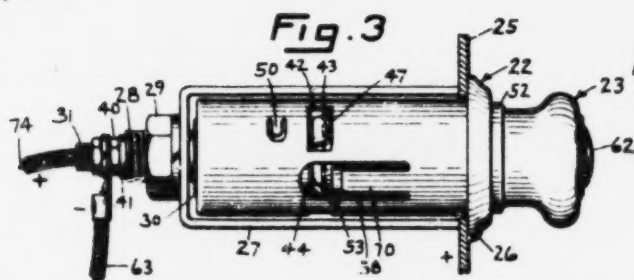
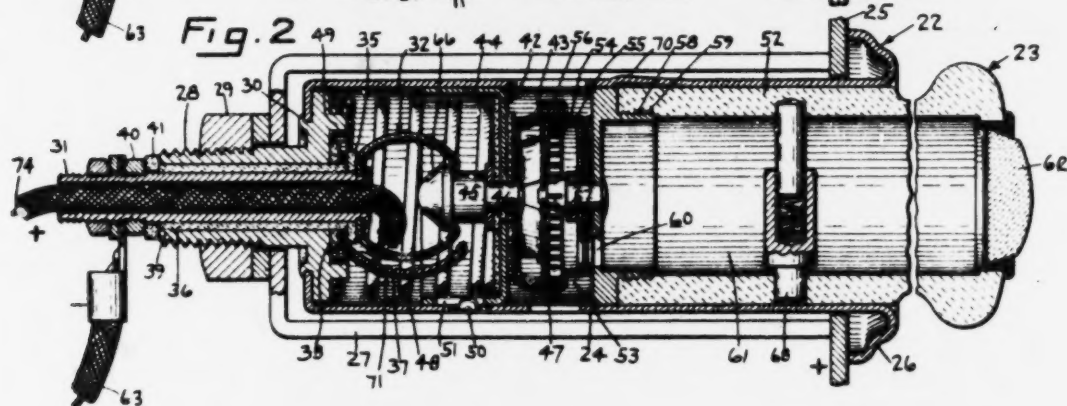
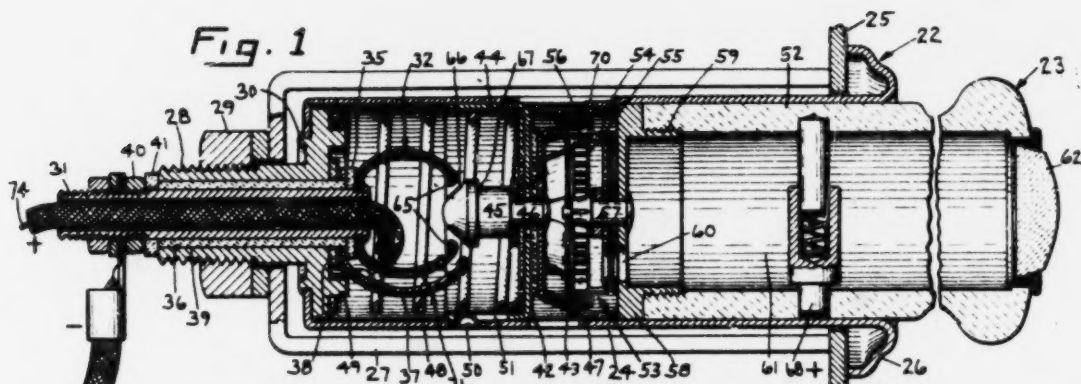
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CIGAR LIGHTER

Original Filed July 23, 1932

2 Sheets-Sheet 1



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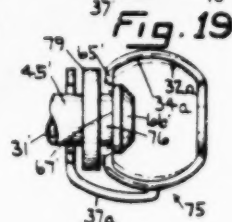
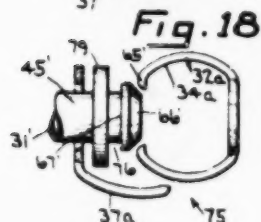
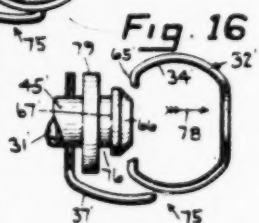
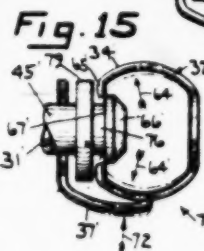
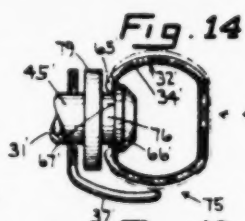
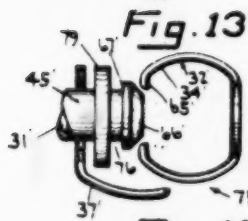
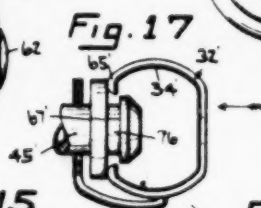
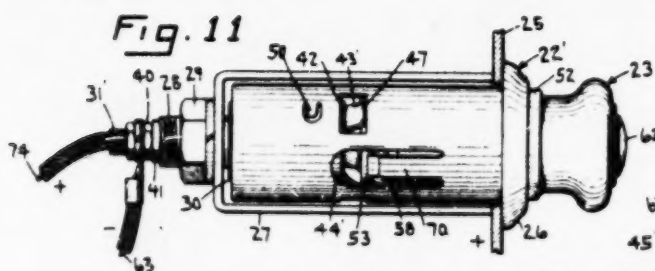
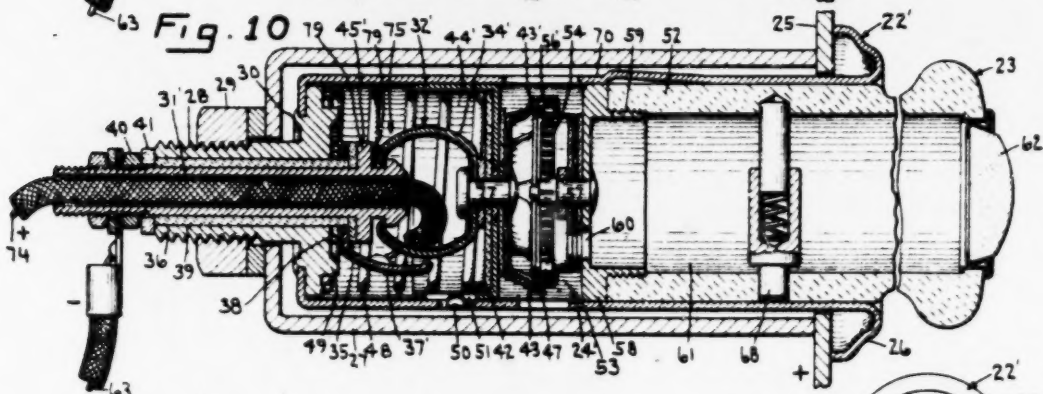
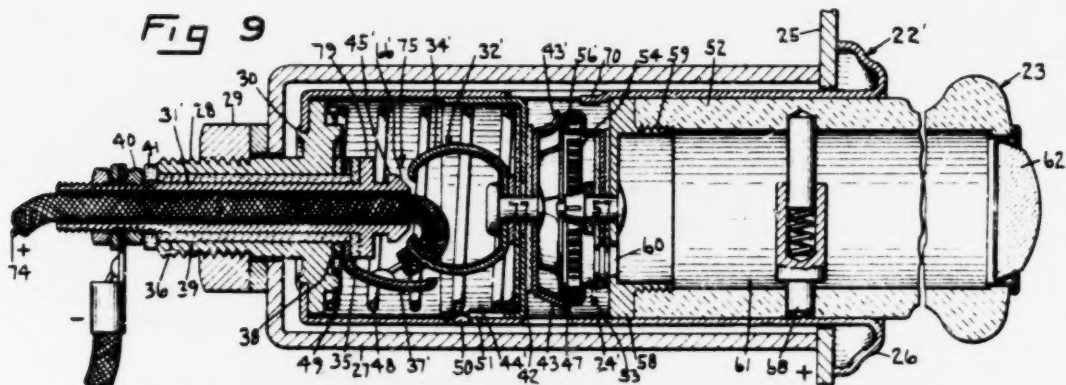
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CIGAR LIGHTER

Original Filed July 23, 1932

2 Sheets-Sheet 2



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2,117,703

CIGAR LIGHTER

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Application July 23, 1932, Serial No. 624,193
Renewed August 5, 1937

17 Claims. (Cl. 219—32)

This invention relates to improved cigar and cigarette lighters, particularly of the types for use in automobiles.

Most lighters of this type, which have been manufactured heretofore, are so designed that it is necessary for the driver to push against a movable igniter unit or to press a switch button for an extended period of time in order to close an electrical circuit for the purpose of heating the lighter to incandescence. However, these lighters required the driver to continuously divert his observation from the road to the cigar lighter, in order to observe when the igniting unit thereon was heated to incandescence and in condition for use, the heated wire itself serving as an indicator. Besides diverting the driver's observance of the road it necessitated his driving with only one hand while forcing the movable member of the cigar lighter or forcing a push button to circuit closing position with his other hand over a somewhat extended period of time.

In order to overcome the latter disadvantage, some lighters have been constructed with a bayonet lock or its equivalent, which holds the removable unit of the cigar-lighter in circuit closing position so that the igniting coil would be heated to incandescence without the necessity of pushing and holding the removable unit or push button switch in circuit closing position. However, these cigar-lighters, with the bayonet lock, had the marked disadvantage of keeping the circuit closed for an extended time and sometimes even dead shorting the battery of the car for so long a time that complete recharging was necessary in the event of the driver forgetting that he locked the removable igniting unit in closed circuit condition.

With both of these types of lighters, with and without bayonet lock, which are the types most generally in use, there is a strong likelihood of keeping the circuit closed over too long a period of time; this, in addition to the hereinbefore mentioned disadvantages of requiring the operator or driver to take one hand from the wheel and hold the cigar-lighter in closed circuit condition for an extended period of time, and to divert his gaze from the road to the cigar-lighter in order to ascertain when it may be lifted from the instrument panel for use.

It is an object of the present invention to provide an electric cigar-lighter in which it is not necessary for the driver to divert his gaze from the road ahead nor to keep his hand away from the wheel for any considerable extent of time,

the elimination of which makes for greater safety while driving the car.

It is a further object of the present invention to provide a cigar-lighter which will be maintained in closed circuit condition just long enough to heat the igniting coil to incandescence, and with no danger of an excessive drain on the battery.

In its broader aspects, the present invention provides a cigar-lighter wherein it is merely necessary for the driver to move the same in one direction, whereupon the circuit to the igniting coil will be closed and the igniting unit will be automatically held in closed circuit position until the igniting coil is heated to incandescence whereupon the circuit will be broken automatically so that there is no further drain upon the battery, thus, minimizing the skill, care, and effort on the part of the driver.

Also, and of particular importance, the lighter of the present invention, is arranged to give a suitable warning to the driver when heated to incandescence and the circuit is opened, so that there is no danger of the igniting unit cooling after it is heated, as might occur if the driver inadvertently waits too long before picking it up for use.

A feature of the present invention is the provision of means for closing the circuit to the lighter in order to improve the thermal condition of the lighter even though the regular thermally responsive circuit closing contacts are still in the thermally separated and circuit opening position.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is a longitudinal sectional view of the cigar-lighter of the present invention in normal inoperative position.

Fig. 2 is a view similar to Fig. 1, but with the cigar-lighter in closed or operative position.

Fig. 3 is a plan view of the cigar-lighter.

Fig. 4 is a front view.

Fig. 5 is a detail view showing the thermostatic catch of the present invention in the inoperative position.

Fig. 6 is a detail, similar to Fig. 5, but shows the catch in the operative position.

Fig. 7 is a view similar to Figs. 5 and 6, but shows the catch in its partly released condition and in position to close a warning device circuit.

Fig. 8 is a detail view of a modified form of catch in the closed condition, similar to Fig. 6.

Fig. 9 is a longitudinal sectional view, similar

to Fig. 1, but with a modified form of catch and circuit closer, in the normal inoperative position.

Fig. 10 is a view similar to Fig. 9, but shows the parts in the operative position.

Fig. 11 is a plan view of the lighter shown in Figs. 9 and 10.

Fig. 12 is a front view.

Fig. 13 is a detail view of the circuit closer and thermostatic catch of this form of the invention in the open inoperative position, similar to Fig. 9.

Fig. 14 is a detail view, similar to Fig. 13, but shows the catch in closed circuit position.

Fig. 15 is a detail view, similar to Fig. 14, but shows the catch in its partially released position, and in position to close an auxiliary warning device circuit.

Fig. 16 shows the catch and circuit closing parts returned to the open inoperative position.

Fig. 17 is a view similar to Fig. 16 of the invention showing the catch used to effect an auxiliary closing of the circuit even though the catch is thermostatically maintained in an open position.

Fig. 18 is a view similar to Fig. 13, but shows the catch and circuit closer parts made of regular material, rather than bimetallic material.

Fig. 19 is a detail view, similar to Fig. 18, in the closed circuit position and about to be released.

Fig. 20 is a wiring diagram.

For convenience and clarity in the following description, the present invention is shown as applied to what may be termed "sleeve-type" cigar-lighters for use with automobiles, similar to the lighter disclosed in my copending application, Serial No. 357,030, but it should be understood that it may also be used with other types of cigar-lighters. Broadly, the cigar-lighter comprises a base member 22 and a removable igniting unit 23 which may be mechanically and electrically separated from the base member for use.

The base member 22 comprises a socket 24 adapted to be passed through a suitable aperture in an instrument panel 25 of an automobile, or other convenient location, until a flange 26 at the front end thereof engages with the front face of the panel. The socket is rigidly secured in place with a U-shaped yoke 27 fitted over an outer sleeve 28 and a clamping nut 29. The outer sleeve is preferably rigidly secured to the socket 24 by a spun-over flange 30.

A contact carrying sleeve 31 is insulatedly mounted in the outer sleeve 28, and at its forward end there is secured a main contact 32 having a main body portion 33 shaped similar to a washer and one or more integral hook-shaped fingers 34 extending therefrom. The contact carrier sleeve is secured in place by passing a washer 35 and tube 36 of insulation over the contact sleeve 31, passing an auxiliary contact 37 and insulating washer 38 over the insulating sleeve 36, and then passing the entire assembly through a bore 39 of the outer sleeve 28, where it is rigidly secured to the latter part with the nut 40 and insulating washer 41. These various parts of insulation just described prevent electrical connection between the contact sleeve 31 and outer sleeve 28 and are preferably made of mica in order to be heat-resisting.

The base member is completed with a slide 42 which carries an intermediate contact 43. This slide comprises a cup 44 which has a free fit within the socket 24. Near its center the cup is provided with a contact and catch stud 45 which is insulated from the cup by suitable insulating washers. It is held in place by spinning or otherwise heading-over the end of the shank 46, and when this is done a contact washer with yield-

ing fingers 47 forming the intermediate contact 43 is secured to the cup so that current may be passed from the contact 45 to the fingers. The cup also serves to hold a spring 48 in the socket 24, free from the side walls at one end, while the other end of the spring is located in the socket by a shoulder portion 49 of the outer sleeve 28. Longitudinal movement of the slide 44 is limited in two directions by a lanced finger 50 part of the socket 24 being bent into and engaging the ends of a slot 51 in the cup.

The removable igniting unit 23 comprises a body 52 preferably made of bakelite or some similar insulating material of a size to slide freely in the socket 24. At one end it supports a heater unit 53 comprising a spirally wound heating coil 54 in a cup 55. One end of the heating coil is connected electrically to the outer wall of the shell by means of a ring 56 which is spun thereover and the other end of the coil is connected to a stud 57 in the slot. This stud passes through a suitable hole in the shell 55 and is insulated from the latter with suitable insulating washers. It is mechanically and electrically secured to a ring 58 which has a threaded connection 59 with the igniting unit body. The heater unit 53 is provided with a series of holes 60 which allow the incandescent glow of the heating coil to pass through a bore 61 of the body 52 to the front end of the igniting unit 23 where they are magnified and projected by means of a ruby glass 62, or by a disk of Catalin or similar light-conducting material.

The wiring circuit for the cigar-lighter comprises a ground connection through the instrument panel 25, flange 26 and the yoke 27 extending one side 63 of the car battery circuit to the socket 24 portion of the base 22 and the other pole of the circuit comprises a wire 64 from the battery connected to the contact sleeve 31 and rigidly secured thereto with a nut.

Now, of particular importance, the cigar-lighter is, according to the present invention, arranged to prevent an excessive drain on the battery, and to lessen the amount of attention required from the driver. To this end, there is provided a novel catch for holding the igniting unit in energizing position and a novel circuit closer switching arrangement for automatically controlling the circuit between the sliding contact stud 45 and the stationary main contact 32.

This special catch and thermostatically controlled switch is, according to the present invention, made as a unitary structure; that is, both are embodied together and it is thereby possible to effect a marked economy in the cost of manufacture, because fewer parts are required and a single assembly and adjustment takes care of both the catch and the thermostatically controlled switch. In its present preferred form this combined catch and thermostatically controlled switch comprises the main contact 32, made of bimetallic material in order to be responsive to thermal conditions of the latter. The fingers thereon are of narrow width and slightly bowed so that there is a marked tendency for these fingers to spread or to open up in the direction of the arrows 64 in Fig. 7 to the solid line position shown in the latter figure under the influence of heat.

These fingers are provided with hooks 65 at their outer ends which are adapted to engage with a bevel 66 on the front end of the main contact stud 45 and be forced apart thereby and then snapped in back of a shoulder 67 portion of the stud when the sliding sleeve is pushed to-

2,117,763

ward the bottom of the socket into position shown in Fig. 2.

The contact finger hooks 55 thus positively lock the sliding sleeve 44 in the closed position and at the same time complete an electrical connection from the main contact sleeve 31, contact 32, and the stud 45 to the intermediate contact disk 43 and also through the ring 58 and stud 57 of the removable igniting unit 23 to complete the circuit to the heating coil 54 to energize the coil and bring it to incandescence.

As the heating coil 54 is brought to incandescence some of the heat is radiated from the front face of the coil against the inside of the disk 43 and follows through the ring and contact fingers 47. As the fingers are heated in this manner some of the heat follows through to the stud 45 and fixed contact fingers 34, and at the same time heats the air within the chamber formed by the socket 24 and shell 44, to cause the contact fingers to expand gradually in the direction of the arrows 64 (see Fig. 7) until the hooks 55 move clear or free of the shoulder 67 whereupon the spring 48 is free to again move the sliding sleeve 44 forwardly in the socket 24 until the movement is stopped by the lanced ear 59 engaging an end of the slot 51 as shown in Fig. 1. At the same time it pushes the removable igniting unit 23 forwardly in the socket and moves the contact 45 of the switch into open circuit or de-energizing position shown in Figs. 1, 5 and 7.

It should also be noted that the particular form of switching unit and contacts provided therefor by the present invention have the very desirable advantage of making it unnecessary for the operator to twist, push, or in any special manner rotatably align the removable igniting unit 23 relative to the base 22 when returning the unit to the inoperative position on the base, or to do any involved twisting or aligning when it is desired to move the removable igniting unit into the operative or energizing position. It is merely necessary to put the plug 23 into the socket 24 when placing one with the other and merely necessary to push against the end of the igniting unit in order to move it to energizing position.

Normally the igniting unit 23 is in the position shown in Fig. 1 for the driver or other occupant of the car, after using the unit, merely slides it into the socket 24 until the cup 55 and ring 56 thereon engages with the spring contact fingers 47 of the slide 44. The pressure of the spring 48 on the sliding member serves as a stop or indication that the unit has been slid fully into the inoperative position. A spring plunger 68 is located in the plug body 52 to impinge against the bore of the socket 24 and prevent the igniting unit 23 from working out of the socket even though the car vibrates badly.

When it is desired to use the cigar-lighter the driver merely grasps the knob portion of the igniter unit body 52 and pushes it deeper into the socket against the pressure of the yielding spring 48 whereby the bevelled end 66 of the contact plug 45, as the unit slides in the socket 24, engages with the hooks 55 to spread the fingers 34 until the hooks snap over the shoulder 67 as shown in Fig. 6, to lock the sliding unit in the back and switch closing position. Preferably a long finger 70 is lanced inwardly of the socket 24 with a raised portion adapted to engage and complete electrical connection between the socket 24 and igniting unit if the bore of the socket becomes worn considerably. The op-

erator may then release his grip on the igniting unit and again use both hands for driving while the coil 54 is being heated to incandescence.

As the coil comes up to heat, some of the heat travels through the stud 45 and gradually moves the fingers of the bimetallic contact member to open position while the hooks thereon ride over the shoulder portion 67 of the stud 45 until a release between the shoulder and hooks is effected and the igniting unit moved back into the inoperative position shown in Fig. 1 under the influence of the sliding sleeve 44 and spring 48. Thereafter, the driver pulls the lighter from the socket for use.

The light disk 62 at the outer end of the igniting unit 23 serves to transmit an incandescent glow from the heater coil and warn the operator that the lighter is in condition for use. However, this would necessitate the driver glancing at the lighter from time to time in order to know when it was properly heated.

According to the present invention, a positive warning is provided to help the driver and make it unnecessary for him to continuously or sporadically observe the lighter. This novel warning device comprises a switch 71 adapted to be closed automatically when the igniting unit has been brought to the desired degree of incandescence. This switch comprises the contact member 37 of bimetallic material so arranged that when the igniting unit is in the operative position shown in Fig. 2 and is being brought to incandescence, the heat thereof is transmitted to the contact member 37 which curves in the direction of the arrow 72 in Fig. 7, while the main contact arms or fingers 32 move in the direction of the arrows 64. This warning device contact member is located and adjusted so that it contacts with the finger 34 just before and during release of the contact stud 45 from the hooks 55 as shown in Fig. 7. The circuit is completed to a bell 73, or other preferably audible warning device, through a wire 74 connected to the contact 37, of one polarity, while current of the other polarity passes through the wire 74a to the warning device as shown in the wiring diagram, Fig. 20.

Thus, it is merely necessary for the operator or driver to give the igniter unit 23 a quick push into the operative position in Fig. 2, and thereafter continue driving, or otherwise using both hands, and without diverting his eyes from the road ahead, for the structure provided by the present invention automatically returns the igniting unit to inoperative and electrically disconnected positions, and at the same time warns the operator audibly that the lighter has been put into condition for use to light a cigarette, or the like. If preferred the warning device switch 71 provided by the present invention may be used to close the circuit to a lamp, such as the lamp 73a, shown by dot and dash lines in Fig. 20, located in a place remote from the cigar-lighter and close to the regular line of driving vision.

In Figs. 9 to 16 inclusive, there is shown a modified form of the present invention. The removable igniting unit 23 in this form of lighter is exactly the same as that shown in the first form of the invention. The base member 22', however, while like the base member 22 of the preferred form of the invention in many respects is provided with a different form of catch and switch unit 75 comprising a contact stud 45' made integral with a contact sleeve 31' and a sliding sleeve 44' is arranged to support and carry a yielding

bimetallic contact member 32' with bowed fingers 34' and hooks 55'.

The fingers 34' and hooks 55' are normally in the closed position shown in Fig. 9, and are adapted to ride over a bevel 66' on the end of the contact sleeve 31' and hook into a groove 76 in back of the shoulder 67', as shown in Figs. 10 and 14. With this form of the present invention, as with the preferred form, it is merely necessary for the operator to push the igniting unit 23 longitudinally into the bore of a socket 24' portion of the base 22' until the hooks snap into the groove 76 whereupon current is conducted to the outer end of the heater coil 54 through the stud 77, contact fingers 43', and ring 56', the circuit being completed by the closed line between the panel 25, shell 24', ring 58, and stud 57 to the inner end of the coil.

When the switch 75 is closed and as the heater coil is brought to incandescence the spring contact fingers 34' and hooks 55' gradually open from the position shown in Fig. 14 in the direction of the arrow 64' and into the position shown in Fig. 15 until the hooks are free of the shoulder 67' portion of the groove 76, whereupon the sliding unit and hook carried thereby, under the influence of the spring 48, travel in the direction of the arrow 78 shown in Fig. 16 to move the igniting unit again into the inoperative position shown in Fig. 9.

As with the preferred form of the invention, this form may be provided with a warning device, including the contact member 37' insulatedly mounted on the modified form of contact sleeve 31'. Here again the signal contact 37' is made of bimetallic material and curves inwardly in the direction of the arrow 72' (see Fig. 15) as the main contact member 32' carried by the sliding sleeve 44' moves outwardly under the influence of heat in the direction of the arrows 64' until engagement occurs with the signal contact, just before and during release of the switch, when the lighter has been brought to incandescence. The wiring for this signal contact is the same as for the preferred form of the invention already described.

This modified form of the present invention has the advantage of making it possible for the operator to manually manipulate the lighter to obtain a further degree of incandescence without waiting for the main contacts 32' to cool and resume their normal closed position, and to this end there is provided a flange 79 which contacts with the ends of the hook 55' when the igniter is pushed the full extent toward the back of the base member as shown in Fig. 17.

It should be particularly noted that, according to the present invention, the warning device need not be operated as the igniting unit is moving into the operative position, but will only be operated after the igniting unit is heated and ready for use. This is accomplished by arranging the signal device contact so that it moves toward the regular contacts 32 as the lighter is brought to the proper degree of incandescence. When the signal contact 37 or 37' is cold, as when the igniting unit 23 is moved to the operative position, the bevel at the end of the contact stud cannot spread the main contacts sufficiently for them to engage the signal contact and close the signal circuit. However, when the various contacts are heated and the main contacts spread sufficiently to clear the contact stud, for release, the heated signal contact 37, which has con-

tracted, is in a position to close the signal circuit.

In Figs. 18 and 19 there is shown a further modified form of the present invention comprising a yielding contact member 32a, having fingers 34a similar to and arranged to ride over the bevel 66' and snap into grooves 76 in much the same manner as the contact member 32', shown in Figs. 13 and 14, or the contact members 32 shown in Figs. 5 and 6. The parts are proportioned to expand the arms as the heater coil is brought to the desired degree of incandescence. This form of yielding contact member may be used in order to effect greater manufacturing economy and it may be more advantageous than the bimetallic form in lighters which are brought to incandescence only slowly, or if the cigar lighter construction is such that there is a quick flow of heat from the heater coil to the yielding contact member; in other words, where it is desired to have a slowly responsive device. Also, it may be preferred to use a solid contact member 37a as a signal contact rather than the bimetallic form. However, with this form, the contact 37a is shielded or mounted to prevent it from receiving a flow of heat from the heater coil and thereby cause it to remain stationary while the yielding contact members gradually expand from the heat of the coil 54.

If preferred, the catch and switch of the present invention may be, as shown in Fig. 8, arranged to close the circuit to the warning device only as the removable igniting unit is fully heated and is actually travelling to the inoperative position, and not at all prior to such movement. For this purpose, the yielding contacts 32b are provided with slightly longer hooks 55b and a contact stud 45b having two bevels 80 and 81. This arrangement is such that the hooks 55b on the contact fingers slide first over the bevel 80 and then down over the second bevel 81 to hook in back of a shoulder 67b when the operator pushes the igniting unit into place. When the heater coil is brought to incandescence the yielding contact member expands until the ends of the hooks 55b reach the bevel 81. Thereafter, the straight wall or shoulder 67b no longer holds the sliding sleeve back, and as the contact stud 45b is moved relative to the yielding contact member 32b the bevel 81 expands the heated yielding contact members a slightly greater extent to close the gap with the signal contact 37b. Thus, the bevel 81 and pressure of the spring 48 may be used to close the warning device circuit and makes unnecessary any close adjustment between the regular circuit control contacts and the warning device contact.

Cross reference is made to my copending application S. N. 118,838, filed January 2, 1937, which is a division of the present application and wherein are claimed certain features of the invention herein disclosed.

Other variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent, is:—

1. In an electric cigar-lighter, the combination of a base member; a plug removably supported on the base member and movable thereon into longitudinally different operative and inoperative positions; an electrical heating coil on said plug; a warning device; and means, including thermostatically controlled means responsive to the tem-

perature of the heating coil, adapted to move said plug from its operative position longitudinally relative to the base to its inoperative position when said coil is heated a predetermined extent and to render said warning device operative.

2. In an electric cigar-lighter, the combination of a base member; a unit removably supported in operative and inoperative positions by said base member; a heating coil on said unit; means for moving the removable unit in the base member from its operative to its inoperative position; a bimetallic catch associated with said means; a warning device; a bimetallic element associated with said warning device, said bimetallic catch and bimetallic element moving into engagement one with the other in response to the increase in temperature of the heating coil and in this movement releasing the first-named means and moving the removable unit to its inoperative position and actuating the warning device.

3. In an electric cigar-lighter, the combination of a base member; a unit removably supported by said base member in operative and inoperative positions; a heating coil on said unit; means for automatically moving the removable unit in the base member; a thermostatic catch responsive to the increase in temperature of the heating coil to release the first-named means; a warning device; and a warning device contact, said thermostatic catch being adapted to automatically move into engagement with said contact and actuate the warning device.

4. In an electric cigar-lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means for automatically moving the removable unit in the base member; a thermostatic catch responsive to the increase in temperature of the heating coil to release the first-named means; a warning device; a warning device contact; and means for effecting positive relative movement between the catch and the contact to actuate the warning device when the catch is released by the action of the heating coil.

5. In an electric cigar-lighter, the combination of a base member; a unit removably supported by said base member in operative and inoperative positions; a heating coil on said unit; yielding means for automatically moving said unit on the base member; a thermostatic unit influenced by the heating coil for controlling said yielding means; and warning means including a second thermostatic element influenced by the heating coil and adapted to give an audible warning when the heating coil is heated a predetermined extent and when the yielding means is released by said thermostatic unit.

6. In an electric cigar-lighter, the combination of a base member; a unit removably supported by said base member and having an operative and an inoperative position thereon; a heating coil on said unit means for automatically moving the removable unit; a thermostatically controlled unit for controlling said means; a warning device; and a thermostatic element for the warning device, said thermostatic catch expanding and said thermostatic element contracting in response to the increase in temperature of the heating coil, and adapted to simultaneously release the yielding means and give an audible warning when said coil has been heated a predetermined extent.

7. An electric cigar lighter comprising a holder; an igniting unit removably supported on the holder and having a heating element adapted to

be electrically connected to the holder to be brought to incandescence for use, said igniting unit being completely removable from the holder for use and having a body carrying said heating element and concealing the same from view; means on the igniting unit in light conducting relation with the heating element to indicate the degree of incandescence of the heating element when being heated for use; signal means responsive to the temperature of the heating element for indicating that the heating element has attained a predetermined temperature; and means, including means responsive to the temperature of the heating element, to electrically disconnect the latter from the holder when the heating element attains a predetermined temperature.

8. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means slidable in the base for closing a circuit to energize the heating unit; means normally urging said means to open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means upon the heating element attaining its desired heat; a warning device; and means operated by the thermostatic catch upon movement into release position for actuating the warning device.

9. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means slidable in the base for closing a circuit to energize the heating unit; means normally urging said means into open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means upon the heating element attaining its desired heat; and means for producing an audible signal, said means being operated upon movement of the thermostatic catch into release position.

10. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means in the base member for closing a circuit to energize the heating unit; means normally urging said means into open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means upon the heating element attaining its desired heat; and means operated in response to the movement of the thermostatic catch to release position for producing an audible signal.

11. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on the unit; means slidable in the base for closing the circuit to energize the heating unit; means normally urging said means into open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means upon the heating element attaining its desired heat; and means actuated upon release of the thermostatic catch for producing an audible signal.

12. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means slidable in the base member for closing the circuit to energize the heating unit; means normally urging said means to open-circuit position; heat-responsive means for holding the circuit closed and adapted to release the first-named means when the heating element has attained its desired heat; and means operated by the movement of the heat-responsive means

into release position for producing an audible signal.

13. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means including a contact slidable in the base for closing a circuit to energize the heating unit; means normally urging said contact to open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the contact when the heating element has attained its desired heat; and means operable upon release of said contact by the catch for producing an audible signal.

14. In a cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means slidable in the base for closing the circuit to energize the heating unit; means normally urging said means to open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means for movement into open circuit position upon the heating element attaining its desired heat; and means operated when the first-named means moves into open-circuit position for producing an audible signal.

15. In an electric cigar lighter comprising a holder; an igniting unit removably supported on the holder and having a heating element adapted to be electrically connected to the holder to be brought to incandescence for use, said igniting unit being completely removable from the holder for use and having a body carrying said heating element and concealing the same from view; means on the igniting unit in light-conducting relation with the heating element to indicate the degree of incandescence of the heating element when being heated for use; means including means responsive to the temperature of the heating element, to electrically disconnect the latter from the holder when the heating element attains a predetermined temperature; and signal means responsive to the temperature of the heating element for indicating that the heating element has attained a predetermined temperature and that

the heating element is electrically disconnected from the holder.

16. In an electric cigar lighter comprising a holder; an igniting unit removably supported on the holder and having a heating element adapted to be electrically connected to the holder to be brought to incandescence for use, said igniting unit being completely removable from the holder for use and having a body carrying said heating element and concealing the same from view; means on the igniting unit in light-conducting relation with the heating element to indicate the degree of incandescence of the heating element when being heated for use; means, including means responsive to the temperature of the heating element, to electrically disconnect the latter from the holder when the heating element attains a predetermined temperature; and signal means responsive to the temperature of the heating element for indicating that the heating element has attained a predetermined temperature or that the heating element is electrically disconnected from the holder due to the operation of the heat-responsive means.

17. In an electric cigar lighter comprising a holder; an igniting unit movably mounted on the holder and completely removable therefrom for use; a heating element carried by the igniting unit and adapted to be brought to incandescence for use, the body of the igniting unit concealing the heating element from view; means for closing a circuit through the heating element when moved to circuit-closing position; means for indicating the degree of incandescence of the heating element; heat-responsive means for opening the circuit when the heating element attains its predetermined temperature; and signal means actuated when the circuit-opening means operates to indicate that the circuit is open, said means operating during the time that the circuit is in open position due to the action of the heat-responsive means to indicate that the circuit cannot be closed by the normal movement of the igniting unit into circuit-closing position.

JOSEPH H. COHEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,117,703.

May 17, 1938.

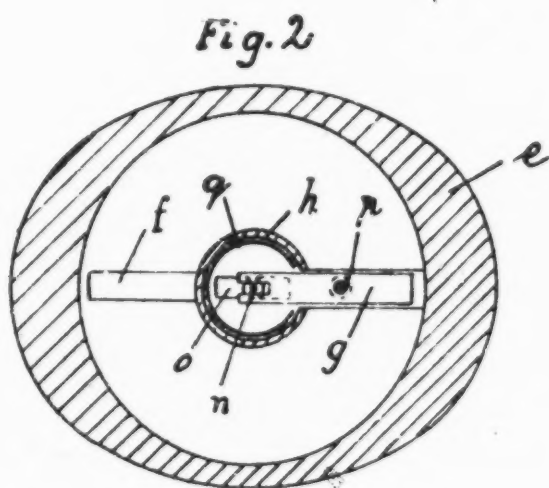
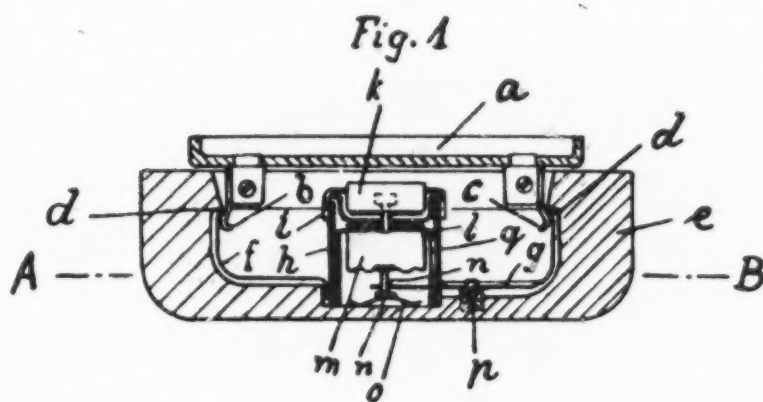
JOSEPH H. COHEN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 15, for "incandescence" read incandescence and for "whereup" read whereupon; line 23, for "incandescence" read incandescence; page 3, second column, line 50, for "heads" read hands; page 5, first column, line 55, claim 5, for "oil" read coil; and line 62, claim 6, after "unit" insert a semicolon; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of August, A. D. 1938.

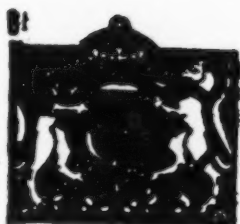
(Seal)

Leslie Frazer,
Acting Commissioner of Patents.



[This Drawing is a full-size reproduction of the Original]

PATENT SPECIFICATION



Convention Date (Germany): Oct. 1, 1927.

298,073

Application Date (In United Kingdom): Aug. 16, 1928. No. 23,630/28.

Complete Accepted: May 9, 1929.

COMPLETE SPECIFICATION.

Improvements in or relating to Electric Cigar-lighters.

I, ADOLF RUPPS, of German nationality, of Gartenstrasse 9, Tübingen, Germany (Assignee of ADOLF SIDLER & Co. G.M.B.H., a German Company, of Schaffhauserstrasse 69, Tübingen, Germany), do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to an electric cigar-lighter which is primarily intended for use in automobile vehicles. With those cigar-lighters wherein the member that carries the glow body is removable from the member that carries the leads and is permanently secured to the vehicle, there is the danger of overheating the glow body even when the latter is so arranged as to be visible.

In order to overcome this objection it has been proposed in specification No. 285,200 to use a cut-out device in conjunction with the electric lighter, the said device comprising a thermostatically-controlled switch or make-and-break device adapted to be included in the lighter circuit.

The present invention consists in an electric cigar-lighter of the character described in the specification above mentioned and in which the lighter is used in conjunction with an expansion capsule, the said capsule being resiliently pressed against a contact of the glow body, and receiving heat from the latter, and the arrangement being such that in the event of the glow body becoming overheated a contact on the capsule moves out of its normal electrical contact with a preferably adjustable contact member connected to one of the leads and so interrupts the circuit.

One constructional form of the invention is illustrated in the accompanying drawings, wherein

Fig. 1 shows a cigar-lighter mainly in central section and

Fig. 2 is a sectional plan on the line A—B in Fig. 1.

The cigar-lighter consists of a base plate *a* to be secured to the wall of the vehicle, with resilient contact members *b* and *c*.

which are connected with the current-supply leads.

The resilient contact members *b* and *c* take up a position in an annular recess *d* in a hook *e*. In the recess *d* contact springs *f* and *g* are arranged opposite to one another. In the position of the parts shown they are in conducting communication with the resilient contact members *b* and *c*. The closing and opening of the circuit are effected by rotating the hood *e* upon the base plate *a*. In a tube *h* connected with the hood the glow body *k* is arranged in a readily exchangeable manner by means of a screw cap *i*. One pole of the glow body is electrically connected with the screw cap *i* or with the tube *h*, with which the contact spring *f* is in conducting communication. The other pole of the glow body *k* is connected with a contact disc *l*. Between this contact disc *l* and the other connection formed by the contact strip is arranged a thermostat, here shown as consisting of an expansion capsule *m*, which is connected with a contact member *n*. The contact strip *g* embraces the stylus of the contact member *n* with such clearance that only a collar of the contact member can come into conducting communication with the forked ends of the contact strip. To the collar of the contact member *n* is secured a spring *o*, which bears against the end wall of a cylindrical recess in the hood *e*, and presses the thermostat resiliently against the contact disc *l* and similarly presses the collar of the contact member *n* against the contact spring *g*. The position of the forked end of the contact strip *g* in relation to the contact member *n* can be adjusted by means of a set screw *p*. The thermostat *m* is electrically insulated from the tube *h* by an intermediate layer *q*. When the glow body *k* is heated the heat is transmitted to the thermostat *m* through the contact disc *l*. The thermostat expands, and as soon as the dimension corresponding to the limiting temperature condition of the glow body is reached, the collar of the contact member *n* moves out of contact with the forked end of the contact strip *g* and the current is interrupted. After suitable cooling the parts then

(Price, 1/-)

return to their original positions again.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An electric cigar lighter used in conjunction with a thermostatic cut-out device characterised by the feature that the said cut-out device consists of an expansion capsule which is resiliently pressed against a contact of the glow body, and which receives heat from the latter,

the arrangement being such that in the event of the glow-body becoming overheated, a contact on the capsule moves out of its normal electric contact with a preferably adjustable contact member connected to one of the leads, and so interrupts the circuit.

2. The improved electric cigar-lighter, substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 25th day of July, 1928.

MARKS & CLERK.

[fol. 533] IN UNITED STATES DISTRICT COURT, DISTRICT OF
CONNECTICUT

STIPULATED EXTRACT OF FILE WRAPPERS OF MEAD, No. 1,736,-
544; COHEN, No. 2,140,311; AND COHEN, PATENT No. 2,117,232

It is hereby stipulated and agreed that the following shall
be embodied in the printed record on appeal in the above
cause:

The Mead patent No. 1,736,544 file wrapper, Defendant's Exhibit I, shall not be printed in the transcript of record on appeal, but shall be transmitted to the Court of Appeals as a physical exhibit, with the consent of said Court. During the prosecution of this patent the Examiner in the Patent Office cited as prior art only the prior patents to Metzger 1,622,334 and Harley 852,326 and no other prior patents, publications, uses, or other instances of prior knowledge. There was no interference with the Copeland patent 1,844,206 or application.

The file wrapper of the Cohen patent 2,140,311, Defendant's Exhibit J, shall not be printed in the transcript of record on appeal and may be transmitted to the Circuit Court of Appeals as a physical exhibit with the consent of said Court. During the prosecution of this Cohen patent in the Patent Office, the following patents were cited and no others: Metzger 1,543,290, Mead 1,736,544, Cohen 1,944,925, Ashton 2,060,783, Wolfson, et al., 1,732,-784, Copeland 1,844,206, British patent to Rupps 298,073, and Schoeller 1,570,286. An interference between this application and Ashton No. 2,084,966, was declared and dis-[fol. 534] solved by a decision of Primary Examiner on the ground that Cohen could not make the count.

It is further agreed that all of column 1, page 1, and lines 1 to 18 of column 2, page 1, of the Cohen patent 2,140,311, were inserted by an amendment of November 19, 1938, in place of the following which appeared at the beginning of the application as filed and which was cancelled:

"This invention relates to improved cigar and cigarette lighters, particularly of the types for use in automobiles.

Most lighters of this type, which have been manufactured heretofore, are so designed that it is necessary for the driver to push against a movable igniter unit or to press a switch button for an extended period of time in order to

close an electrical circuit for the purpose of heating the lighter to incandescence. However, these lighters required the driver to continuously divert his observation from the road to the cigar lighter, in order to observe when the igniting unit thereon was heated to incandescence and in condition for use, the heated wire itself serving as an indicator. Besides diverting the driver's observance of the road it necessitated his driving with only one hand while forcing the movable member of the cigar lighter or forcing a push button to circuit-closing position with his other hand over a somewhat extended period of time.

In order to overcome the latter disadvantage, some lighters have been constructed with a bayonet lock or its equivalent, which holds the removable unit of the cigar lighter in circuit-closing position so that the igniting coil would be [fol. 535] heated to incandescence without the necessity of pushing and holding the removable unit or push button switch in circuit-closing position. However, these cigar lighters, with the bayonet lock, had the marked disadvantage of keeping the circuit closed for an extended time and sometimes even dead shorting the battery of the car for so long a time that complete recharging was necessary in the event of the driver forgetting that he locked the removable igniting unit in closed-circuit condition.

With both of these types of lighters, with and without bayonet lock, which are the types most generally in use, there is a strong likelihood of keeping the circuit closed over too long a period of time; this, in addition to the hereinbefore mentioned disadvantages of requiring the operator or driver to take one hand from the wheel and hold the cigar lighter in closed-circuit condition for an extended period of time, and to divert his gaze from the road to the cigar lighter in order to ascertain when it may be lifted from the instrument panel for use.

It is an object of the present invention to provide an electric cigar lighter in which it is not necessary for the driver to divert his gaze from the road ahead nor to keep his hand away from the wheel for any considerable extent of time, the elimination of which makes for greater safety while driving the car.

It is a further object of the present invention to provide a cigar lighter which will be maintained in closed-circuit condition just long enough to heat the igniting coil to

incandescence, and with no danger of an excessive drain on the battery.

In its broader aspects the present invention provides a [fol. 536] cigar lighter wherein it is merely necessary for the driver to move the same in one direction, whereupon the circuit to the igniting coil will be closed and the igniting unit will be automatically held in closed-circuit position until the igniting coil is heated to incandescence whereupon the circuit will be broken automatically so that there is no further drain upon the battery, thus, minimizing the skill, care, and effort on the part of the driver.

A feature of the present invention is the provision of means for closing the circuit to the lighter in order to improve the thermal condition of the lighter even though the regular thermally responsive circuit-closing contacts are still in the thermally separated and circuit-opening position."

Claim 3 of Cohen 2,140,311 was originally presented and was allowed as filed. Claim 20 (former 40) was added by the amendment of Sept. 28, 1938, and concerning it and the other claims added at the same time Cohen said by his attorney, Arthur A. Johnson:

" * * * These claims are drawn, in varying scope, to a cigar lighter having two separate parts, one a holding device and the other an igniting unit; with one of said parts having a normally open, manually operated switch completely carried thereby and having a pair of contacts which when moved together are held together until a heat-responsive means associated therewith releases the holding means.

As was pointed out some months ago at the interview granted by the Primary Examiner and the Assistant Examiner in charge of this case, the placing of the complete [fol. 537] switch with the holding and release means on one part is a valuable and important feature of Applicant's invention. This construction does away with the necessity of matching of the two parts which is a tedious and expensive operation.

Also, the construction permits the igniting unit to be used with any of several holding devices so that a replacement of damaged or pilfered parts can be made without requiring the whole device to be dismantled and ad-

justed or matched in order to again have an efficient lighter.

The factor of replacing pilfered parts is quite important where the devices are installed as standard equipment on automobiles on the assembly lines. When matched parts are required the two parts are installed as a unit and must be maintained as a unit. Now, the igniting unit is small and can be very easily removed from the holding device and secreted on the person so that by the time a car is to be delivered its igniting units may be missing, thus requiring that a new lighter with a matched holder and igniter be installed in the car. With the device of the present invention, inasmuch as the holding device and igniting units do not have to be matched, the holding devices alone can be installed on the assembly line and an igniting unit inserted on delivery of the car to the customer.

At the time the present invention was made, the only known electric cigar lighter of the separable type having an automatic control for the circuit was that disclosed in Mead. This patent, however, has part of the switch on the removable member and part on the stationary member so that the two parts must be matched to obtain efficient [fol. 538] results, and when once matched the two parts thereof cannot be interchanged with like parts of other lighters and obtain the same efficient results. Applicant's contribution is clearly an advance over the construction shown in the Mead patent."

At the same time, said Arthur A. Johnson made affidavit as follows in said application:

"I am informed as to the construction and operation of electric cigar lighters for automobiles now being offered to trade by several manufacturers, including Casco Products Corporation, licensee under the above entitled application. The construction of the thermostatically controlled cigar lighter of the manufacture of Casco Products Corporation is of the type described in the Cohen patent 2,117,232, manufactured under the patent to Mead 1,736,544, under license of Automatic Devices Corporation. In this type of cigar lighter, when the heating element is heated for use, heat responsive means on the holder of the cigar lighter, which claspably engages a portion of the igniting unit, gradually releases its clasp and permits the igniting unit to be returned to open circuit position by a spring. The relation between the heat responsive means and the engaged

portion of the igniting unit and the tension of the spring which moves the igniting unit to open circuit position and which is carried by the igniting unit is critical, for if the igniting unit is released too easily, or the spring is too strong, the heating element may not be as hot as desired for use. If the igniting unit is released too hard, or the spring is too weak, the heating element may be overheated. [fol. 539] The tension of a circuit opening spring and the tension of the heat responsive means must be carefully adjusted, one against the other. Since the circuit opening spring is on the igniting unit and the heat responsive means is on the holding device, best results can be had only by keeping these parts in adjusted matched sets.

When cigar lighters are installed as standard equipment on automobiles, I am informed and believe that it is not uncommon that the igniting units disappear from the holding devices during the assembly of the car, either because they are knocked out or fall out of the holder, or because they are stolen. It is preferable, therefore, that the holder alone be mounted on the car while on the assembly line, or during shipment. Yet where the means for automatically opening the circuit is carried jointly by the holder and the igniter, it is impracticable, for the reasons stated above, to separate the matched pair of parts.

With the invention of the above entitled application, however, this problem is solved because the holder and igniter need not be matched one against the other. The means for opening the circuit automatically is carried entirely by one of the parts, the holder in the form of the invention shown in the above entitled application."

On October 1, 1938, claim 20 of this Cohen patent 2,140,311 was amended by inserting:

"in heat-receiving relation with said heating element" after "heat responsive means." (See lines 40 to 42 column 2, page 6 of the patent.)

[fol. 540] Concerning this amendment Cohen by his attorney, Arthur A. Johnson, said in the record as to an interview with the Examiner:

" * * * and it was agreed that the invention defined by these claims was different from these references inasmuch as a new and improved result was obtained by having

all of the normally open, manually closed, thermostatically-controlled switch carried by one of the members for the reasons fully stated in the remarks to said amendment which are supported by an affidavit attached thereto. At the interview the Examiner raised the question that the combination of Copeland's switch (Fig. 6) (it being agreed that the form of the invention shown in Fig. 2 was not pertinent to this combination), might meet the terms of the claims when combined in the circuit with any wireless type lighter as, for example, Metzger, No. 1,543,290, or Schoeller No. 1,570,286. After much consideration, it was agreed that if these claims were amended to bring out that the heat-responsive means was in heat-receiving relation with the heating element, or that the switch was moved to closed-circuit position by manual engagement of a portion of the igniting unit accessible while the igniting unit is supported by the holder, that the claims would then clearly distinguish from such a combination, and be patentable to Applicant."

Claim 20 (former 40) was again rejected October 12, 1938, because (as stated by the Examiner):

"lacking patentability over each of Cohen and Wolfson, et al. In view of Mead it would be obvious and unpatentable [fol. 541] broadly to provide a thermostatic means to hold the parts of any 'wireless' lighter in circuit closing relationship."

In the amendment of October 20, 1938, the same claim was again amended by inserting after the previous amendment to this claim:

"coaxial with the heating element and the movable members."

and applicant Cohen said by his attorney

" * * * in the Wolfson patent there is a switch comprising two parts on the igniting unit, but in the Mead patent with which these other two are combined by the Examiner, one part of the switch is on the holder and the other part is on the igniting unit. In any legitimate combination of these references, following the teachings of Mead, the switch must be kept closed by a cooperative engagement between the igniting unit and the holding device."

“the big advance which applicant made over Mead was the provision, on one of the two separable and removable parts of the cigar lighter, of the automatic heat-responsive switch so that the need for matching of the holding device with the igniting unit is obviated. * * *

All this is avoided by the present invention, in the specific embodiment shown, by mounting the switch with its two relatively movable contacts, detent means, urging means, and heat-responsive means so as to be carried entirely by solely one and the same of the two parts of the cigar lighter.

Accordingly, each of the above enumerated claims has been amended to bring out that these parts referred to in the claims are carried entirely and solely by one and the same of the two parts. * * *

Following the teaching of Mead, the mechanic would have to arrange for holding the Wolfson button depressed by a latch on the holding device, * * *.

It is respectfully submitted that there is no justification in either Cohen, Wolfson, or Mead for holding that it lacks invention to hold the two parts of the switch in Cohen together by a thermostatic latch, or the two parts of the switch in Wolfson together by a similar latch with the latch being carried by the part carrying the switch. * * *.”

In the amendment of November 15, 1938, claim 20 (former 40) was again amended by canceling the last three lines of the former claim and substituting in place thereof:

“heat-responsive means in heat-receiving relation with said heating element, coaxial with the heating element and coaxial with the movable members, said heat-responsive means holding the movable members in circuit-closing position until the heating element has attained its desired usable heat.”

Defendant's Exhibit K, the file wrapper of the Cohen patent 2,117,232 shall not be printed in the transcript on appeal but shall be transmitted as a physical exhibit with the consent of the Circuit Court of Appeals.

[fol. 543] During the prosecution of the Cohen patent 2,117,232 the prior art cited by the Examiner included Adams 1,373,583, Morris 1,376,154, Langos 1,697,686, Mead 1,736,544, and Mahan 1,757,255, and Rintels 1,940,463 was mentioned, but no other prior art was cited.

Claims 1, 2 (former 4) and 10 (former 16) were rejected for

“* * * lack of invention over each of Langos and Mahan. In view of Mead it would not amount to invention to provide a thermostatic contact-detent for holding the units of the references in circuit-closing position and releasing them to open-circuit position after a predetermined heating period. The necessary mechanical changes for applying the teaching of Mead to such lighters would be obvious to any skilled mechanic. Whether one or both of the contacts be free of the socket contacts in inoperative position is clearly a matter of choice, both being obvious alternative arrangements.”

These claims were further rejected in the first action for

“lack of invention over Mead. In view of Langos or Mahan, it would be an obvious change to make the unit movable longitudinally, into open- or closed-circuit positions merely by changing the position of the detent-contact to hold the unit in ‘in’ position and providing a spring for moving it to ‘out’ position.”

By the amendment of February 3, 1934, claims 1 and 2 of this patent were amended by removing the word “movable” and substituting slidable. Claim 1 was also amended [fol. 544] at this same time by inserting the word “releasably” after “and”, and the following remarks were made:

“Reconsideration of the rejection of claim 1 for lack of invention over Langos, is asked. While Langos has a spring finger 9 which rides up on the side of an annular groove and urges the heating element outwardly of the socket, there is, however, no spring detent to catch the igniting unit and hold it in its circuit-closing position in the socket. To provide a spring detent for this function would defeat Langos’ purpose, for he sought to make it impossible for the igniting unit to remain deep in the socket when it is released from hand engagement. Applicant appears to be the first to do this for any purpose, and accordingly it is submitted that it is not necessary for the claim to state how the heating element is released. The claim has been amended to specify that the spring detent catches and releasably holds the igniting unit deep in the socket.”

The same remarks were said to apply to Claims 2 and 10 of the patent.

In the action of May 24, 1934, the Examiner said:

“The rejections of the last office action are repeated.

Claims 1, 4, 9, 10, 11, 13, 15, 16, 17 and 19 are further rejected for lack of invention over each of Adams and Morris, whose igniters are normally in shallow and inoperative positions and are adapted to be moved, against the force of spring means, into operative (deep) positions. [fol. 545] In view of Mead it would not amount to invention (1) to equip any igniter with a thermostatic latch for holding the device in circuit-closing position until the igniter is heated, (2) to make said latch one of the electrical contacts, and (3) to substitute a resistance coil for any other type of resistor. The application of the teachings of Mead to the structures of the new references would involve no more than average mechanical skill. It is merely a matter of choice whether the thermostat be heated by (1) the current flowing through the circuit, (2) the heat from the resistor, or (3) both. It is usual practice to make thermostats adjustable. The claims are entirely too broad in view of the art.”

In the amendment of November 21st, 1934, claim 1 had the following phrase added at the end of the claim:

“and as a result of said longitudinal movement of the igniting unit to said operative position.”

By the same amendment claim 2 (former 4) had the word “open” cancelled in line 9 and in place thereof was substituted—“release said plug”. At the end of this claim was added—

“said catch being rendered operative as a result of the longitudinal movement of the igniting unit into said operative position.”

Claim 10 (former 16) by the same amendment had the word “coil” cancelled and in place thereof the word “element” was substituted.

Cohen said concerning claims 1 and 2 of the patent:

“Claim 1 has been amended to make it clear that the catch becomes operative as a result of the longitudinal [fol. 546] movement of the igniting unit into operative position. In Morris and Adams, there is no spring detent or anything at all to hold the igniter in energizing position.

In Mead also, there is no spring detent for holding the igniting unit against longitudinal movement but merely to hold it against rotation. Therefore, it is submitted, no proper combination of Morris or Adams and Mead would produce the structure claimed, especially since the claim now specifies that the detent is made operative as a result of the longitudinal movement of the igniting unit to operative position."

Concerning claim 10 of the patent it was said:

"These claims call for the bimetallic detent to be in close proximity to the heater element. In this way, the device is made very responsive and certain in its action. The idea is totally lacking in Mead."

In the argument of August 21st, 1935, claims 1 and 2 of the patent were not changed and Cohen said concerning claims 1 and 2:

"Reconsideration of the rejection of claim 1 is asked. This claim covers Applicant's novel construction in which a spring detent is employed to releasably hold the igniting unit deep in the socket in operative position against the means tending to release it."

In claim 10 of the patent "convection" was changed to "conduction" at this time.

[fol. 547] As to claim 10 of this patent Cohen said:

"The claims were intended to bring out that the heating element is in close proximity to the bimetallic contact spring by radiation and conduction. In Mead, the thermostatic member is only heated by radiation or convection, and is not in close proximity to the heating element."

In the amendment of May 23rd, 1936, claim 1 was amended by inserting the word "manually" after "longitudinally" (see line 35 of page 3 of the patent). This same claim in the same line, the word "from" was substituted for the word "into", and in the next line "to a" was inserted in place of "and".

At the same time claim 2 of the patent (former 4) was amended by having the word "manually" inserted in line 57 of page 3 of the patent.

Concerning claims 1 and 2, Cohen said:

"* * * recite that the longitudinally slidable unit is manually to be sent from shallow inoperative position to

deep operative position, are again submitted, with a request that the rejection thereof be reconsidered."

Claim 16 of the patent (former 22) was said to be distinguished along the line of claim 1.

Claim 1 was amended April 10th, 1937, by inserting—

"cooperating contacts on the igniting unit and the base member respectively adapted to engage when the igniting unit is in said deep operative position and disengage when [fol. 548] in said shallow inoperative position, said contacts being maintained in good electrical engagement by the tendency of the igniting unit to move toward inoperative position."

This insert was subsequently cancelled in the amendment of September 25th, 1937.

In the April 10th, 1937, amendment claim 2 (former 4) had the following inserted:

"cooperating contacts on the igniting unit and the base member respectively adapted to engage when the igniting unit is in said deep operative position and disengage when in said shallow inoperative position, said contacts being maintained in good electrical engagement by the tendency of the igniting unit to move toward inoperative position."

This insert was cancelled by the amendment of September 25th, 1937.

Claim 16 of the patent (former 22) had the following insertion made:

"a heating element carried by said igniting unit; cooperating contacts on the base and igniting unit respectively for energizing said heating element only when the igniting unit is in said deep operative position."

This insert was cancelled by the amendment of September 25th, 1937. At the same time this claim had the following also inserted into it:

"and deenergizing the heating element, said forcing means by tending to move the igniting unit toward shallow position causing said cooperating contacts to maintain good electrical engagement when the igniting unit is in energizing position."

Claim 18 of the patent (former 26) was added by the amendment of April 10, 1937.

The amendment to claim 1 inserted April 10, 1937, was cancelled September 25, 1937, and in place thereof the following was inserted:

“cooperating contacts on the igniting unit and the base member respectively, adapted to engage when the igniting unit is in said deep operable position and disengage when in said shallow inoperative position, one of the contacts on the base member extending into the path of movement of one of the contacts on the igniting unit so that said contacts are maintained in good electrical engagement by the tendency of the igniting unit to move toward inoperative position.”

The aforementioned insert in claim 16 of the patent (former 22) added by the amendment of April 10, 1937, and cancelled by the amendment of September 25, 1937, had the following substituted in place thereof:

“a heating element carried by said igniting unit; cooperating contacts on the base and igniting unit respectively for energizing said heating element only when the igniting unit is in said deep operative position, one of the contacts on the base member extending into the path of movement of one of the contacts on the igniting unit.”

[fol. 550] In the argument of September 25th, 1937, Cohen said by his attorney concerning claims 1, 2 and 16 of the patent (former 1, 4 and 22) that these claims

“have been amended to bring out the relation of the contacts as agreed upon at the recent interview courteously granted the attorney for the Applicant by the Examiner in charge of this application. It was stated at the interview that such amendments would remove any question of indefiniteness and functionality from the claims.”

James T. Kline, George F. Smyth, Attorneys for
Plaintiff, 945 Main Street, Bridgeport, Conn.
R. S. Allyn, Counsel for Defendant.

Dated: August 21, 1940.

[fol. 551] IN DISTRICT COURT OF THE UNITED STATES, DISTRICT OF CONNECTICUT

Civil Action No. 97

THE AUTOMATIC DEVICES CORPORATION,

v.

THE CUNO ENGINEERING CORPORATION

FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. Plaintiff is a corporation of Connecticut. It is a patent holding company and does not manufacture or sell cigar lighters. Defendant is a Connecticut Corporation located in Meriden, Connecticut, where it has long been engaged in the manufacture and sale of cigar lighters. The expense of this action is being borne by plaintiff's licensee, Casco Products Corporation, also a Connecticut corporation.

2. This is an action under the patent laws for infringement of claims 1, 2, 3 and 11 of the Mead patent 1,736,544 filed August 24, 1927, dated November 19, 1929 for Cigar Lighter, transferred by mesne assignments to plaintiff February 6, 1936. Infringement is also urged of claims 3 and 20 of the Cohen patent 2,140,311 dated December 13, 1938 for Cigar Lighter, filed January 2, 1937, as an alleged division of Cohen patent 2,117,703 filed July 23, 1932, and issued to plaintiff. Also infringement is urged of claims 1, 2, 10, 16 and 18 of the Cohen patent 2,117,232 dated May 10, 1938 for Cigar Lighter, filed March 29, 1933 and issued to plaintiff.

3. The defendant's device, accused of infringement, described with the aid of numerical references drawn from [fol. 552] Exhibits 1A to 1C, consists of two main parts, viz., socket and plug.

(a) The socket is a subcombination comprising a metallic cylinder 10 adapted to be inserted through the instrument panel 14 of an automobile. From the rear end of the socket protrudes a stud 11 carrying a rod 12 which connects the inside and outside of the socket. To the outer end of the

rod 12 is attached a current supply wire. The inner end of said rod carries three bimetallic fingers 16 which, by their co-operation with the flange 35 of the "movable" plug hereinafter described, constitute the latch of the device also serving as live contacts. In the base of the socket are three rigid, spaced, base contact abutments 17, against which the cup 28 of the "fixed" plug rests when the movable plug is in both closed-circuit and open-circuit positions.

(b) Associated with the socket, as above described, are other parts including a clamping member 15 which in co-operation with a flange on the outer end of the socket serves to clamp the socket to the panel of the automobile. But except for this clamping function, these associated parts of the socket are not in co-operative relationship with the socket, or indeed with the plug.

(c) The plug consists of two relatively movable sub-combinations, one of which (hereinafter referred to as the "fixed" plug) is carried on the sleeve 18, and the other of which (hereinafter referred to as the "movable" plug) is carried on sleeve 19. The sleeve 18 comprises a tube of insulating material which carries at its inner end (inner with respect to the socket member) a metal sleeve 23 having spoke-like arms 24 joined at the center and carrying a cylindrical block 25. The inner end of the block 25 is en- [fol. 553] gaged by a screw 26 which carries the heating element comprised of the igniter coil 27. The inner convolution of the igniter coil is received in a slot in the head of the screw 26 and the outer convolution of the igniter coil is connected to the cup 28 which surrounds the igniter coil. When the plug is inserted in the socket, the insulating tube 18 slides along and is guided by the inner wall 10 of the socket until the igniter cup 28 abuts against the base contacts 17 of the socket. This is the carrying or open-circuit position of the fixed plug; also its operative or closed-circuit position.

(d) The movable plug consists of the metal sleeve 19 which is mounted slidably in the interior of the sleeve 23. The sleeve 19 has at its outer edge (outer with respect to the socket) an end wall 20 carrying a stud 21 to which is secured an insulating disc and screw 21 (a) on which the knob 22 is threaded. The sleeve 19 at its inner end is shaped into a contact flange 35 adapted to engage and be

retained by the bimetallic latch fingers 16 of the socket. With the entire plug in carrying or open-circuit position, the movable plug can be manually pushed inward by pressure on the knob 22 until the flange 35 of the sleeve 19 is engaged by the bimetallic fingers 16 of the socket, thus closing the circuit.

(e) There is a coil spring 34 interposed between the spoke-like arms 24 of the sleeve 23 in the fixed plug and the end plate 20 of the sleeve 19 in the movable plug. The movement of the movable plug from carrying to operative position is accomplished against the pressure of this spring, as a result of which the contact cup 28 is held under spring pressure against the butts of the socket as long as the bimetallic fingers 16 in the socket hold the flange 35 of the fixed plug in engagement. When by convection and radiation [fol. 554] (but not by conduction) the bimetallic fingers of the socket are spread apart after the igniter coil has been heated to incandescence, the spring 34 returns the movable plug to carrying position with the circuit open, the entire plug fixed and movable being then ready for removable for application.

4. (a) Hammarstrom, 493,380 (application 1892) showed a "combined Cut-out and Lightning-arrester" by introducing into a line of electrical current a bimetallic member and a latch so arranged that "a strong electric current" would expand the bimetallic part, apparently from the heat generated by the current through the bimetallic part, thus releasing the latch member and breaking the circuit. The invention was apparently primarily directed to the protection of telegraph circuits from the onslaught of a lightning bolt.

(b) Denhard, 1,143,572 (application August 31, 1910), disclosed a means for thermostatic control for electric heaters, with particular reference to electric flat-irons. The thermostatic means disclosed contained no parts having coaxial characteristics or any peculiar adaptability to a socket or cylindrical member; nor did the disclosure include any such socket member in its combination. He did, however, disclose as current-breaking means bimetallic strips, responsive to the temperature of the working base of the flat-iron, in co-operation with a latch, which holds the device in closed-circuit position until a predetermined temperature of the iron is attained.

(c) Stahl 1,372,207 (application 1919) illustrates a construction in which the bimetallic element of a thermostatic switch functions directly as the latch, as is also the case in Hammarstrom 493,380.

[fol. 555] (d) Morris 1,376,154 (application 1919) shows a wireless cigar lighter having as an alternative form a semi-automatic feature whereby the plug is held in the open-circuit or carrying position by a spring in the socket. To close the circuit, the entire plug is manually pressed inwardly. It is manually held in this position by the operator against the tension of the spring during the entire heating up period of the igniter coil. Whenever the operator releases the manual pressure on the plug, the spring returns the plug to its normal open-circuit position. There is no thermostatic control in the Morris patent.

(e) Zecchini, 1,437,701 (application April 15, 1921) is an example of prior art showing that a coaxial relationship between the parts was the usual arrangement in the conventional plug and socket type of lighter.

(f) Copeland, 1,844,206 (application April 18, 1927) disclosed in a lighter socket thermostatic means, consisting of parts in coaxial relationship, acting as an automatic means to break the circuit in response to the temperature of a resistance element. This resistance element did not itself serve as an igniter; rather it served to break the circuit after the lapse of time sufficient to accomplish the incandescence of the igniter and the lighting of a cigar. Copeland showed no plug; rather he contemplated that a cigar should serve as a plug; that the manual insertion of the cigar into the socket should close the circuit and thus start the lighting process.

(g) Cohen, 1,944,925 (application April 22, 1929) shows a plug and socket lighter with complete switch-mechanism in the socket. His plug was adapted automatically to break the circuit upon the release of manual pressure on its knob. [fol. 556] All the essential parts are in coaxial relationship with each other. Devices made under this disclosure were in use for two years prior to the two Cohen patents in suit. This patent shows no thermal control.

(h) Wolfson, 1,980,157 (application April 10, 1931) showed a plug and socket lighter, in which all essential

parts were in coaxial relationship to each other, with the plug carrying a spring effective, under the arrangement disclosed, by pressure on a fixed part of the plug to push the movable part thereof carrying the heater unit into a normal carrying or open-circuit position with the heater unit out of contact with the metallic contact fingers of the socket. The contact fingers of the socket, however, lacked the function of latching and the function of unlatching in response to heat.

Conclusions of Law

Mead

5. Claim 1 is not infringed.

Comment

Claim 1 covers a combination purporting to have two main subcombinations, viz., (1) a removable plug, and (2) a "base member". But the base member disclosed in the patent is not the conventional simple socket well-known in the electrical art. It is a complex combination in itself which amongst other features serves as a mounting for a movable rotating socket 41. And claim 1 definitely includes this rotating socket as one of the elements of its subcombination when it refers to "means on said base member for moving said plug to an energizing position in which said coil is energized."

[fol. 557] It is not sensible to direct this reference, as plaintiff would have me do, to the knob on the plug. For the knob of the plug no more co-operates with the movement of the plug than the handle of a hammer with its head. Clearly the quoted reference is directed to the socket which guides the plug in its longitudinal and rotary movements.

The defendant's device does not include the complex base member disclosed by the patent. In the defendant's device the socket does not move at all (nor the fixed plug either) when the movable plug moves from carrying to closed-circuit position. The defendant has utilized a socket which performs all the useful functions which in the disclosure of the patent are accomplished by a plurality of elements including the socket 41 and its associated parts plus the base member 34 and its bracket 37 and other associated

parts. As a result the defendant's device involves only a simplified co-operation between plug and socket members instead of the complex co-operation which Mead provided betwixt plug, socket and base members.

Mead

6. Claim 2 is not infringed.

Comment

This conclusion turns upon a proper construction of the claim, and I turn forthwith to that task.

Claim 2 states a combination composed of three main sub-combinations. The first sub-combination is the plug. The only unusual feature of Mead's plug which could possibly be considered as a contribution to a genuine invention is the rotary contact pin 75 which protrudes through a slot in the socket. The second subcombination is the socket. The only unusual feature of the socket is the fact that it is rotatably mounted upon the third combination, a base member, thereby deriving rotary movement in one direction [fol. 558] through manual pressure on the plug and in the other direction through the force of a spring.

The third subcombination is indicated by that language of the claim which says "means responsive to the temperature of said heating unit for interrupting said heating circuit." The patent discloses as the interrupting means certain bimetallic parts 54, acting in co-operation with a spring 47 which may or may not be bimetallic. But it is not enough for the patent to specify the elementary parts. For the combination claim to have validity, the patent must also disclose how the separate parts may be given the capacity for mechanical and electrical co-operation; without this disclosure no operative device or combination has been shown.

In order to teach how his chosen parts might be brought into co-operative relationship, Mead showed his thermostatic means 57 mounted on a bracket of the base-member, which constitutes the third subcombination of the claim. There is utterly nothing in the specifications to suggest that the inventor himself knew how to work the necessary parts of the aggregate combination into two subcombinations, plug and socket; his only solution of the problem

of introducing into the familiar plug-and-socket combination a thermostatic current breaker involved the use of an additional subcombination, viz., the base-member. The specifications call for a base-member as an indispensable element; there is nothing to show that the base-member was an optional or preferred arrangement, indeed no substitute arrangement was disclosed.

It is true, of course, that claim 2, unlike claim 1, does not expressly call for a base-member. But the claim would be void for indefiniteness if its call for thermostatic means were not deemed to include the base-member on which the thermostatic means is mounted and through which alone [fol. 559] the thermostatic means can co-operate with plug and socket.

Moreover, in view of the prior art in the field of manually portable electrical devices, the claims in suit to avoid invalidity must be narrowly construed. In view of such prior art as Zecchini, Hammarstrom and Denhard, Mead's success, whether attributable to genuine invention or to mechanical skill, in working out an arrangement whereby latching means subject to thermostatic control (old in themselves) might be brought into co-operation with the socket and plug parts of an electric lighter (also old in themselves) must be limited to the means used. Thus Mead's invention, if any, must be limited to the three-fold combination which was his only solution of the problem. Cf. *Automatic Devices v. Sinko Tool*, 45 U. S. P. Q., 394, C. C. A., 7th Circ., April 27, 1940.

Thus viewed, the accused device does not infringe. It does not use the unusual features of Mead's plug and socket members adverted to above. It does not use Mead's base-member which, as just pointed out, is impliedly a part of claim 2, if the claim has validity. It does not follow Mead's arrangement of a three-fold combination. Instead, it performs every function of Mead's disclosure by a simplified and improved arrangement of two sub-combinations only, as against Mead's three. The monopoly of the patent may not be invoked thus to throttle the development of the art.

The plaintiff suggests that in the accused device there are parts associated with the socket which in effect constitute a base member equivalent to that of Mead. I cannot agree. The parts referred to (Par. 3b, supra) co-

operate with the socket as a clamping means; they co-operate neither with the socket nor with the plug in the operation of the device. In Mead, however, the base-member carries outside the socket a subcombination which [fol. 560] includes latching and unlatching means; and this latching subcombination in the operation of the disclosed device is in active mechanical co-operation with the subcombination of his socket; also with the subcombination of his plug.

Nor can it properly be contended that the accused device, like Mead, utilizes a three-fold combination, the only essential difference being that the accused device has made two subcombinations of the plug (fixed and movable), whereas Mead's base-member comprised two subcombinations (thermostatic control and socket). For the fixed plug of the accused device co-operates with the socket only as a holding means. In the function of operation, the fixed plug moves not at all; its mechanical relation to the socket is precisely the same when the current is open as when closed. The only active, direct co-operation which serves to make and break the current is between the movable plug and the socket. This is a simple one-way form of co-operation, as distinguished from the complex two-way co-operation of Mead. And in utilizing this switch-like push button type of plug, the defendant has followed Zecchini rather than Mead. Cf. *Automatic Devices v. Sinka*, supra, where it was said: "a mere longitudinal movement of the defendant's push button in the center of his plug, after the plug has come to rest and the contacts are all made, is not the equivalent of moving the entire plug in order to close the circuit."

Mead

7. Claim 3 is not infringed.

Comment

Like claim 2, this claim also does not specifically mention the base-member as an element of its claimed combination. But, like claim 2, it calls for thermostatic means [fol. 561] which so far as the disclosure of the patent goes are a part of the base-member and can co-operate with the plug in socket only with the aid of the base-member.

Mead

8. Claim 11 is not infringed.

Comment

This claim resembles claim 1 rather than claims 2 and 3 in that it expressly calls for three subcombinations; the base-member as well as the plug and socket members are specifically incorporated into the claimed combination.

The accused device, as we have seen, calls for a simplified structure in which all the co-operative parts are compressed into plug and socket members, thus dispensing with the base-member as a co-operating part essential to the entire combination.

Cohen No. 2,140,311

9. Claim 3 is invalid for lack of patentable invention.

Comment

At first glance, claim 3 would seem to follow Mead's disclosure in calling for a "base-member" as a third subcombination in addition to the plug and socket. But the specifications make it plain that the base-member called for by claim 1 is not a part in mechanical co-operation with the socket member; rather it is merely a flange on the end of the socket, not independently in mechanical co-operation with the socket or other parts.

It results that the validity of this claim depends, not upon the introduction of a new subcombination with a new function [fol. 562] into co-operation with conventional plug and socket combinations, as in the Mead claims discussed above, but rather upon the expansion of the conventional plug and socket members well-known to the prior art to include specified thermostatic control.

I have been shown no complete counterpart of Cohen's disclosure in the prior art. But enough of the prior art has been shown to convince me that claim 3 lacks patentable invention.

The plaintiff says the gist of the invention here claimed is "the disposition of the bimetallic fingers within the socket in coaxial alignment with the plug".

This contention closely resembles that advanced by the plaintiff with respect to the first Meuer patent litigated in

Cutler-Hammer v. Carling Tool & Machine Co., 3 Fed. Supp. 150. I there held that a coplanar relationship between the parts of an electric switch whereby the inventor obtained a minimum "dimension axially of the rotating element" was a matter of design rather than invention. This holding was upheld on appeal. 63 Fed. (2nd) 998. So here I must hold that it was not beyond the field of skill in design for Cohen to work the latching and unlatching elements of Mead into plug and socket where more compactly disposed in coaxial relationship they would still perform the same function.

Moreover, as appears in Paragraph 4 above, Copeland disclosed thermostatic means in a socket, the thermostatic parts being coaxial with the socket. Claim 3, to be sure, calls for thermostatic means responsive to the temperature of the heating coil, and Copeland's thermostatic means were responsive, not directly to the heating coil, but rather to the heat of a resistance element operating upon a bimetallic bar or circuit-breaker. But Denhard, long before, had disclosed a bimetallic circuit-breaker which was responsive to the temperature of the working surface of his device. And it [fol. 563] required no invention for Cohen to make his bimetallic members responsive to the temperature of the working surface of his device, which happened to be the heating coil. And of course it required no invention, in view of the non-automatic prior art, for Cohen to put his heating coil or "working surface" on the inner end of a plug removably mounted in the socket.

Claim 3 calls for a thermostatic means which shall not only co-operate in the circuit breaking function, but shall also function as a latching means to hold the combination in closed-circuit position until the required heat has accumulated. Denhard showed a latching means in co-operation with circuit-breaking means. Also Mead.

It might perhaps be urged that to sustain its validity claim 3 should be narrowly construed so as to call for a combination which included thermostatic means consisting of bimetallic parts which themselves served both to latch and through their heat-responsive qualities to unlatch. But Hammarstrom showed broadly this two-fold function of bimetal, and I must hold that it involved no invention over Mead to work such a feature into a plug and socket lighter. For when Mead showed a latch 52 and 53, held in latching position (Fig. 14) by a bimetal spring 54 (see Fig. 16), surely it involved no invention with the aid of Ham-

marstrom and Stahl to substitute bimetal for the actual latching piece 53. And that is the essence of the Cohen claim now under consideration.

There is, I think, no contention that features of claim 3, other than those discussed above, involved invention.

10. Claim 20 is void for lack of patentable invention.

[fol. 564]

Comment

Plaintiff says:

“The gist of this claim is the relative movement of contact carrying members in one of the two main parts of the cigar lighter (the holding device or the igniter unit) as a result of which the circuit may be manually closed and then automatically opened by the joint action of the returning spring and bimetallic latch fingers engaging one of the contacts of the relatively movable members (and coaxial therewith and with the igniter coil) when the bimetallic fingers are heated by the heat produced by the igniter coil carried by the plug.”

Certainly the relative movement of contact carrying members in one of the two main parts of the lighter involved no invention over Cohen, 1,944,925. In other respects, the claim shows no more patentable invention than claim 3. Altogether it discloses only a rearrangement of old parts within the range of mechanical skill. Cf. *Automatic Devices v. Sinko*, supra.

Cohen No. 2,117,232

11. Claim 1 is invalid for lack of patentable invention.

The plaintiff says:

“The gist of this claim is the latching in of the movable part of the igniting unit in deep operative position and so forming the latch means that the tension of the withdrawing spring serves to maintain the contacts in good electrical engagement.”

[fol. 565] As to this, I cannot perceive that Cohen showed patentable invention over Mead who used spring pressure to maintain a steady electrical contact between a pin and latch member. All Cohen has done in this respect has been

to translate Mead's rotary movement to a longitudinal movement. Nor did it involve invention, in view of Hammarstrom and Mead, to substitute for the contact fingers of Wolfson, 1,980,157, a bimetallic latch.

12. Claims 2 and 16 are invalid for lack of patentable invention.

Comment

These claims are summarized by the plaintiff thus:

"These claims are similar to claim 1, but further provide that the detent fingers are thermally responsive."

As to this, as my comment under Paragraph 9 above indicates, the use of the bimetal for the two-fold function of latching by a spring lock and unlatching through the action of heat on bimetal involved no patentable invention over Hammarstrom and Mead, both of whom also showed a latch which served also as a contact member.

13. Claims 10 and 18 are invalid for lack of patentable invention.

Comment

The plaintiff's summary of these claims is as follows:

"The gist of these claims is the provision of the combined contact and catch made of bimetal and adapted to [fol. 566] engage and hold the circuit closing contact of the igniter unit, and the location of it in close proximity to the igniter coil so that it quickly responds to the heat of the latter. This is precisely what is found in defendant's device."

Thus viewed, the claim states no more than a rearrangement of claim 2 whereby the bimetallic latch is specifically located in close proximity to the heater element. Surely this additional feature was a matter of design rather than invention.

General Comment

Undoubtedly the inventor who first devised the use of bimetal as an automatic circuit-breaker in electrical devices deserved well of the human race. The record before me

suggests that Hammarstrom was perhaps that man; certainly neither Mead nor Cohen.

I have little doubt that the inventor who first succeeded in applying a bimetallic circuit breaker to a portable electrical heating device made the contribution of a true inventor to society. Perhaps on this record Denhard was the man.

But after the bimetallic circuit breaker had been introduced into a variety of electrical appliances such as flat-irons, coffee pots, etc., and after the electric cigar lighter had progressed through the reel stage to the wireless type of plug and socket device and the wireless type had progressed from the open face to the inverted face type, and the inverted face type had acquired semi-automatic features which held the plug in open-circuit position in the absence of manual pressure, the room for future invention in this class of electric lighter was strictly limited. I have serious doubt whether Mead transcended the realm of design; [fol. 567] whether in essence he did more than produce a new design for old parts having familiar functions, arranging for the co-operation of the several parts by means thoroughly familiar to one skilled in the general art of portable electrical appliances. But in any event, it is clear to me that if Mead's disclosure involved invention the only inherent invention was confined to the correlative arrangement of the numerous parts which he used. Against the background of the prior art, his arrangement was not entitled to a broad range of equivalents. And the defendant has used a simplified and improved arrangement, dispensing with some of the parts which Mead found necessary.

As against the two Cohen patents in suit, Mead and Copeland constitute prior art. Definitely Cohen was not the first to incorporate the automatic feature of bimetal heat control into an operative electric cigar lighter. Altogether it appears to me that Cohen's achievement, skillful though it was, at least with respect to the claims in suit fell short of patentable invention.

14. The defendant is entitled to a decree dismissing the complaint, with costs, and may submit such a decree for entry.

Dated at New Haven this 7th day of June, 1940.

C. C. Hincks, United States District Judge.

[fol. 568] IN UNITED STATES DISTRICT COURT

FINAL DECREE ~~≠~~ Filed June 19, 1940

This cause having come on to be heard at final hearing before the Court, in the Federal Building, at New Haven, Connecticut, on November 2nd and 3rd, 1939, upon the testimony of witnesses called by the respective parties, and upon the exhibits, records and proceedings, and counsel for the respective parties having been heard, and briefs of the respective parties having been filed, and the Court being fully advised in the premises and having jurisdiction over the parties and subject matter, and the Court having made certain Findings of Fact and Conclusions of Law dated June 7, 1940, it is now

Ordered, Adjudged and Decreed as follows:

1. That the Plaintiff, The Automatic Devices Corporation, a corporation of Connecticut, is a patent holding company and the owner by mesne assignments of United States Letters Patent No. 1,736,544 issued Nov. 19, 1929, to Herbert E. Mead, assignor to S. T. Jessop Co., Inc., an Illinois Corporation, Patent No. 2,117,232 issued May 10, 1938, to Joseph H. Cohen assignor to The Automatic Devices Corporation, and Patent No. 2,140,311 issued December 13, 1939, to Joseph H. Cohen assignor to The Automatic Devices Corporation.

2. That Casco Products Corporation, a corporation of Connecticut, is the licensee of the Plaintiff under said United States Letters Patent Nos. 1,736,544, 2,117,232 and 2,140,311 and that said Casco Products Corporation paid the expenses of Plaintiff in this cause of action.

3. That claims 1, 2, 3 and 11 of United States Letters Patent No. 1,736,544 if valid are not infringed by defendant's device in suit illustrated by the drawing marked [fol. 569] "Plaintiff's Exhibit 1A" in evidence, photostat of said drawing being annexed hereto.

4. That claims 1, 2, 10, 16, and 18 of United States Letters Patent No. 2,117,232 issued to Joseph H. Cohen assignor to The Automatic Devices Corporation are invalid for lack of patentable invention.

5. That claims 3 and 20 of United States Letters Patent No. 2,140,311 issued to Joseph H. Cohen assignor to The

Automatic Devices Corporation are invalid for lack of patentable invention.

6. That the defendant has not infringed upon any valid rights of the plaintiff.

7. That the bill of complaint herein be and the same hereby is dismissed.

8. That defendant recover of the plaintiff its costs and disbursements of this suit to be taxed by the Clerk, and that defendant have execution therefor against the Plaintiff.

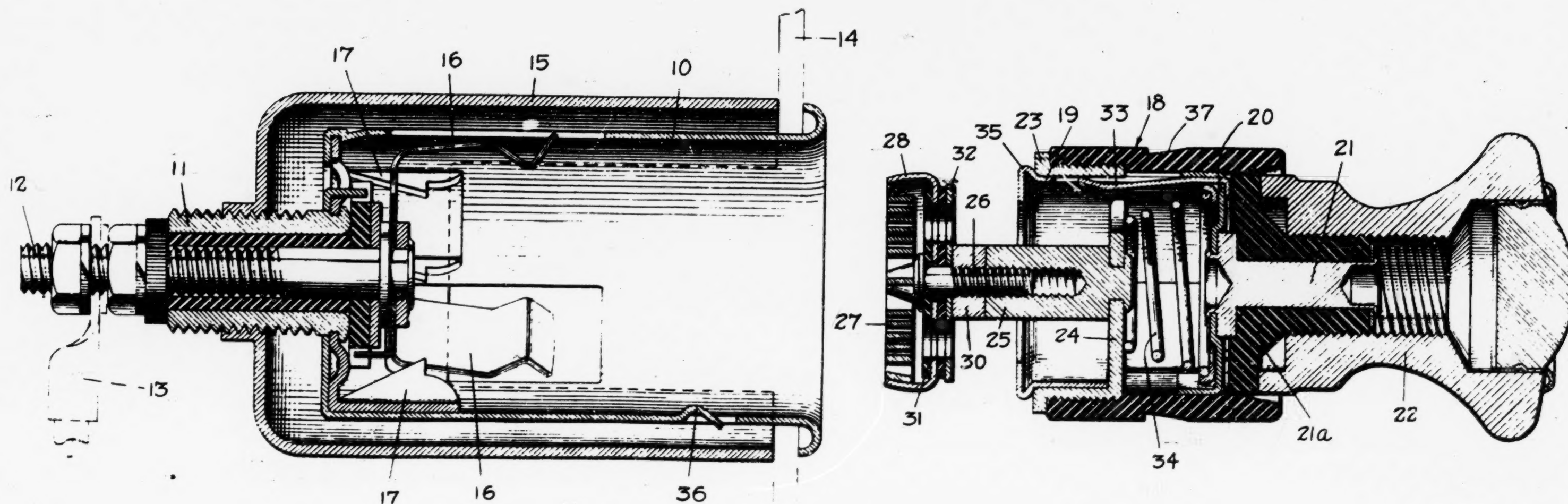
(Sgd.) C. C. Hincks, United States District Court.

Dated: New Haven, Conn., June 19, 1940.

(Here Follows 1 Photolithograph, Side Folio 570)



Exhibit 1A



[fol. 571] UNITED STATES DISTRICT COURT, DISTRICT OF
CONNECTICUT

[Title omitted]

NOTICE OF APPEAL

SIRS:

Notice is hereby given that The Automatic Devices Corporation, plaintiff in the above-identified action, does hereby appeal under and in accordance with the provisions of the Statutes and Rule 73 of the Rules of Civil Procedure for the District Courts of the United States to the United States Circuit Court of Appeals for the Second Circuit from the provisions of paragraphs numbered 3, 4, 5, 6, 7 and 8 of the judgment entitled "Final Decree" which was signed and entered in the above-entitled action on the 19th day of June, 1940.

The Automatic Devices Corporation, By James T. Kline, George F. Smyth, Attorneys, 945 Main Street, Bridgeport, Conn.

Dated: August 21, 1940.

To: Clarence W. Bronson, Esq., and Charles M. Lyman, Esq., Attorneys for Defendant, 129 Church Street, New Haven, Conn.

[fol. 572] IN UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION DESIGNATING CONTENTS OF RECORD ON APPEAL

Now comes plaintiff in the above-entitled action, The Automatic Devices Corporation, by its attorneys, James T. Kline and George F. Smyth, of 945 Main Street, Bridgeport, Connecticut, under and in accordance with the provisions of Rule 75 (a) of the Rules of Civil Procedure for the District Courts of the United States and designates the following as the portions of the record, proceedings and evidence to be contained in the record on appeal (* * * more than one copy of any document to be excluded * * *) of plaintiff from the judgment (designated "Final Decree") of this Court which was signed and entered on the 19th

day of June, 1940, to the United States Circuit Court of Appeals for the Second Circuit:

1. Statement in Compliance with Rule 13, Paragraph 4 of the United States Circuit Court of Appeals for the Second Circuit.

2. Bill of Complaint.

3. Plaintiff's Bill of Particulars.

4. Answer of Defendant.

5. Stipulation and Order Amending Answer.

[fol. 573] 6. Minutes of Trial as Follows:

Frontispiece

P. 1

Plaintiff's Prima Facie Case

1. Offer of certain of Plaintiff's Exhibits

P. 20, line 12 thru P. 30

2. Testimony of Johnson

Pp. 31 thru 83

Pp. 86 thru 117

3. Testimony of Cohen

Pp. 118 thru 151

4. Testimony of Cuno

Pp. 152 thru 155, line 16

Defendant's Proof

5. Offer of certain of Defendant's Exhibits

P. 155, line 17 thru P. 159

6. Testimony of Cuno

Pp. 160 thru 172B

7. Testimony of Wolfson

Pp. 173 thru 262

8. Discussion of patents in book

Pp. 267 thru 288A

Plaintiff's Rebuttal

9. Offer of certain of Plaintiff's Exhibits

Pp. 289 thru 294

10. Testimony of Head

Pp. 295 thru 331, line 11

11. Offer of Jessop lists

P. 331, line 12 thru P. 332

12. Continuation of Testimony of Head

Pp. 333 thru 334

13. Testimony of Johnson

Pp. 335 thru 367, line 3

14. Exhibit 7 and Exhibit C inserted

P. 367, the sentence in lines 4 thru 7

P. 369, line 3, thru P. 372, line 23

[fol. 574] 7. Stipulation and testimony of Herbert E. Mead, Adam John Dunsmore, George W. Johnson, and Sidney Thomas Jessop, taken in the suit brought by plaintiff herein against Sinko Tool & Mfg. Co. in the District Court of the United States for the Northern District of Illinois, Eastern Division, in Equity No. 16,188.

8. Plaintiff's Exhibits:

1. Three drawings of Cuno Automatic Cigar Lighter.
 - 1-A. Drawing of Cuno Automatic Cigar Lighter.
 - 1-B. Drawing of Cuno Automatic Cigar Lighter.
 - 1-C. Drawing of Cuno Automatic Cigar Lighter.
 3. License agreements between Automatic Devices Corporation and Casco Products Corporation.
 4. Copy of Mead patent No. 1,736,544.
 5. Copy of first Cohen patent No. 2,140,311.
 6. Copy of second Cohen patent No. 2,117,232.
 28. Photostatic copy of front page and page 480 of Montgomery Ward Catalog for Spring and Summer of 1929.
 29. Cuno chart—re sales.
 - 29-A. Copy of Smith British Patent No. 285,200.
 31. Plaintiff's Exhibit 30 of Sinko case. (Bill of Sale.)
 32. Plaintiff's Exhibit 31 of Sinko case. (Five sheets made by Mead.)
 34. Plaintiff's Exhibit 34 of Sinko case. (List of tools.)
 36. Plaintiff's Exhibit 36 of Sinko case. (Montgomery Ward Catalog.)
 38. Photograph of Exhibit 33 of Sinko case. (Cigar lighter model.)
- [fol. 575] 39. List headed "Shipments of Jesco Auto-match as Indicated by Invoices of S. T. Jessop Company, Incorporated.

9. Defendant's Exhibits:

- B. Drawing of Casco Commercial lighter.
- C. Print of one of the form of the Mead device.
- E. "Saturday Evening Post" advertisement.
- F. Sample of trade paper advertisement.
- H. Four sheets, loose-leaf catalog sheets.
- L. Copies of prior art patents (portion relied upon).

Patent Numbers	Name	Date
493,380	Hammarstrom	Mar. 14, 1893
852,326	Harley	Apr. 30, 1907
1,025,852	Andrews	May 7, 1912
1,143,572	Denhard	June 15, 1915
1,294,045	Cavanagh	Feb. 11, 1919
1,318,168	Newsom	Oct. 7, 1919
1,372,207	Stahl	Mar. 22, 1921
1,373,583	Adams	Apr. 5, 1921
1,376,154	Morris	Apr. 26, 1921
1,437,701	Zecchini	Dec. 5, 1922
1,540,628	Hurxthal, et al.	June 2, 1925
1,622,334	Metzger	Mar. 29, 1927
1,697,686	Langos	Jan. 1, 1929
1,732,784	Wolfson, et al.	Oct. 22, 1929
1,757,255	Mahan	May 6, 1930
1,838,363	Copeland	Dec. 29, 1931
1,844,206	Copeland	Feb. 9, 1932
1,944,925	Cohen	Jan. 30, 1934
1,980,157	Wolfson	Nov. 6, 1934
2,060,783	Ashton	Nov. 17, 1936
2,084,966	Ashton	June 22, 1937
2,117,703	Cohen	May 17, 1938
Br. 298,073	Rupps	May 9, 1929

[fol. 576] 10. Stipulated extract of file wrappers of Mead, Patent No. 1,736,544; Cohen, Patent No. 2,140,311; and Cohen, Patent No. 2,117,232.

11. Findings of fact and conclusions of law.

12. Judgment (marked Final Decree) which was signed and entered on the 19th day of June, 1940.

13. Notice of appeal.

14. Stipulation designating contents of record on appeal.

15. Stipulation regarding reproduction of Defendant's Exhibits E, F and H.

16. Stipulations extending time for completing appeal record.

17. The following exhibits of Plaintiff and Defendant are not those reproduced in the transcript of record, but are to be identified therein and submitted to the Clerk of the United States Circuit Court of Appeals for the Second Circuit as physical exhibits:

Plaintiff's Exhibits:

2. Accused cigar lighter manufactured by defendant.
7. Transcript of record in case of Automatic Devices Corporation v. Sinko Tool & Mfg. Co.
9. Enlarged drawing of Sheet 1 of Mead patent.
10. Animated model of Mead device.
11. Enlarged drawing of Sheet 2 of Mead patent.
12. Mead device (with outside spring).
- [fol. 577] 13. Mead device (with inside spring).
14. Enlargement of Sheet 1 of first Cohen patent No. 2,140,311.
15. Enlarged drawing of Sheet 2 of first Cohen patent.
16. Animated Model of first Cohen patent.
17. Casco non-automatic lighter.
18. Animated model of second Cohen patent No. 2,117,-232.
19. Casco automatic cigar lighter.
20. Enlarged drawing of second Cohen patent.
21. Enlarged drawing of Exhibit 1-A.
22. Animated model of defendant's device.
23. Enlarged drawing of Exhibit 1-B.
24. Enlarged drawing of Exhibit 1-C.
25. Enlarged drawing of commercial Casco Automatic Wireless Cigar Lighter.
26. Chart of Sale.
33. Plaintiff's Exhibit 32 of Sinko case. (Instruction Sheet.)
35. Plaintiff's Exhibit 35 of Sinko case. (Carton.)
37. Carton for Jesco Automatch Lighter.
41. Enlarged drawing of British Smith patent No. 285,-200.
42. Enlarged drawing of British Rupps patent No. 298,-073.

Defendant's Exhibits:

- D. Early Cuno lighter.
- G. Cigar lighter plug (Ford type).
- I. File wrapper of Mead patent No. 1,736,544.
- J. File wrapper of Cohen patent No. 2,140,311.
- K. File wrapper of Cohen patent No. 2,117,232.
- [fol. 578] L. Copies of prior art patents (portion not relied upon).

M. Cut-away sample (Cuno Automatic).

O. Sample of Wolfson patent No. 1,980,157.

It is stipulated and agreed by and between the attorneys for the parties herein, the Honorable Court consenting, that the foregoing shall constitute the contents of the record on appeal.

James T. Kline, George F. Smyth, Counsel for Plaintiff. R. S. Allyn, Counsel for Defendant.

Dated: August 28, 1940.

It is so ordered.

C. C. Hincks, United States District Judge.

[fol. 579] IN UNITED STATES DISTRICT COURT, DISTRICT OF CONNECTICUT

[Title omitted]

STIPULATION REGARDING RECORD ON APPEAL

It is hereby stipulated by and between counsel for the parties to the above-entitled action that, in connection with the appeal of plaintiff to be taken from the judgment of this Court in this action, Defendant's Exhibits E, F and H, which are produced in color, may be reproduced in the record in black and white instead of colors; and that an order to the foregoing effect may be entered without further notice to either party.

James T. Kline, George F. Smyth, Counsel for Plaintiff. R. S. Allyn, Counsel for Defendant.

Dated: August 28, 1940.

It is so ordered:

C. C. Hincks, United States District Judge.

[fol. 580] IN UNITED STATES DISTRICT COURT, DISTRICT OF CONNECTICUT

[Title omitted]

STIPULATION EXTENDING TIME FOR COMPLETING APPEAL RECORD

It is Stipulated by and between the parties, with the consent of the Court, that the appellant's time for filing the

record and briefs in the appeal taken on August 22, 1940, be extended for a period of thirty (30) days to October 31, 1940, inclusive.

James T. Kline, George F. Smyth, Attorneys for
Plaintiff, 945 Main Street, Bridgeport, Connecticut.
R. S. Allyn, Counsel for Defendant.

Dated: August 28, 1940.

It is so ordered:

C. C. Hincks, United States District Judge.

[fol. 581] IN UNITED STATES DISTRICT COURT, DISTRICT OF
CONNECTICUT

[Title omitted]

AFFIDAVIT OF JAMES T. KLINE

James T. Kline, being duly sworn, deposes and says, upon information and belief, that because of the large amount of testimony and the number of patents involved, the preparation of the record and briefs in the appeal taken August 22, 1940, will require more than the forty (40) days provided for by Rule 73 (g) Rules of Civil Procedure, and that it will be necessary to have an extension of time of thirty (30) days to complete the record and the brief to be filed therewith. Preparation of the record has already been started and the patent copies to be incorporated in the record have been ordered.

James T. Kline.

Subscribed and sworn to before me this 21st day of
August, 1940. Minnie Pezzullo, Notary Public.

[fol. 582] IN UNITED STATES DISTRICT COURT, DISTRICT OF
CONNECTICUT

[Title omitted]

STIPULATION AS TO RECORD

It is hereby stipulated and agreed, that the foregoing (in 2 vols.) is a true transcript of the record of the said

District Court in the above-entitled matter as agreed on by the parties.

Dated, October —, 1940.

James T. Kline, George F. Smyth, Counsel for Plaintiff. R. S. Allyn, Counsel for Defendant.

[fol. 583] Clerk's Certificate to foregoing transcript omitted in printing.

[fol. 584] IN UNITED STATES CIRCUIT COURT OF APPEALS FOR
THE SECOND CIRCUIT, OCTOBER TERM, 1940

No. 154

AUTOMATIC DEVICES CORPORATION, Appellant,

v.

THE CUNO ENGINEERING CORPORATION, Appellee

(Argued January 9, 1941. Decided February 3, 1941)

Appeal by the plaintiff from a judgment of the District Court for the District of Connecticut, dismissing a complaint in an action to enjoin the infringement of claims two, three and eleven of Patent No. 1,736,544, issued to Herbert E. Mead on November 19, 1929; and claims one, two, ten, sixteen, and eighteen of Patent No. 2,117,232, issued to Joseph H. Cohen on May 10, 1938.

Before: L. Hand, Augustus N. Hand and Chase, Circuit
Judges

Drury W. Cooper for the appellant.

Robert S. Allyn for the appellee.

OPINION

[fol. 585] L. HAND, C. J.:

The plaintiff appeals from a judgment dismissing its complaint in an action to enjoin the infringement of two patents: i. e. claims two, three and eleven of Patent No. 1,736,544, issued to Herbert E. Mead; and claims one, two, ten, sixteen, and eighteen of No. 2,117,232, issued to Joseph

H. Cohen. The district judge held that Mead's patent was not infringed and that Cohen's patent was invalid. Both inventions are for improvements in cigar and cigarette lighters installed in motor-cars, containing a glow member heated by, or being itself, a resistance coil in an electric circuit from the igniter coil. When such lighters first appeared they were in form of plugs, carried in a socket on the dashboard and pulled out when used. Two wires from the igniter coil led to opposite ends of a resistance coil in the plug, and, when pulled taut, these closed an open contact in the circuit and heated the glow member. After the plug had been used the release of tension on the wires opened the contact, broke the circuit, and the wires were reeled back into the socket as the plug was returned. These were called "reel type" lighters; in them the plug was never out of the circuit. They were in use at least as early as 1917. In 1921 a patent was issued to one, Morris (No. 1,376,154), for another type, the "wireless" lighter, in which no wires were attached to the plug, which, when pulled out of the socket, kept hot only so long as it took the glow member to cool off. In this type, of which there were several forms, while the plug rested in the socket the contacts of the circuit were open, and when the user wished to use it he completed the circuit by pushing it home—preferably against the resistance of a spring—and he was obliged to hold it in place until the glow member was hot enough. After he concluded that it had become so (in some forms the glow member was visible) he took out the plug, used it like a match or torch, and returned it to the socket. These lighters required the continued attention [fol. 586] of the user, because it was essential that the plug should not close the circuit while the glow member was not to be heated, and that the circuit should not be closed for too long while it was. The record does not show how extensive was the use of these lighters before 1927 or 1928, when the plaintiff began to make them, except that they were already in great demand and much competition had developed among their manufacturers. Another device of the same sort appeared only a little more than a year after Morris (Zecchini, No. 1,437,701, Dec. 5, 1922); a third some six years later (Metzger, No. 1,622,334, March 29, 1927); and still a fourth less than a year before Mead's patent appeared (Langos No. 1,697,686, January 1, 1929). None of these differed basically from Morris, and they show that

during the seven intervening years the art had been making rather futile attempts at improving and refining upon his disclosure.

So far as appears, nobody in this country before Mead made "wireless" lighters automatic; that is to say, so that they should hold their position, after they had been manually made to close the circuit, should automatically break the circuit when the glow member got hot enough, and should give notice that the plug was ready for use. Smith filed a British application for an automatic "cut-out" by means of a thermostat in December, 1926 (Brit. Pat. 285,200 (1928)) but that we cannot consider (§ 72, Title 35, U. S. C.) because the patent did not issue until 1928. Rupp had a similar device (Brit. Pat. 298,073) but even his German filing date was after Mead's. The art had indeed for many years used thermostats to break a circuit when it got overcharged; such uses go back to 1893 (Hammarstrom, No. 493,380). Moreover thermostats had been installed as "cut-outs" in tools—e. g. in sadirons—fifteen years before Mead's application was filed (Andrews, No. 1,025,852). But these uses rather fortify than impair the invention; for, the more general and familiar was the use of a thermostat to [fol. 587] cut out an over-heated member in an electric current, the more curious it is that no one should have thought of its use to remedy the known defects of "wireless" lighters.

The only doubt, as it seems to us, that the prior art throws upon the invention arises from Copeland (No. 1,844,206) whose application was filed on April 18, 1927, four months before Mead's, and who was therefore a prior inventor. (Mead tried to carry his date back of April 18, 1927, and if it were an ordinary issue, we might agree that he succeeded, although the judge made no finding about it. Nor need we do so either; the standard in such cases is very exacting; and here no documentary evidence really corroborated the testimony of Mead and those who saw his work.) Copeland disclosed two forms of lighter, in both of which the cigar was inserted in a tube at the end of which was the glow member. In one form (figure two) the cigar was used to press the glow member against a spring and overset it, and thus to make a contact that completed the circuit; in the other form (figure six) a push-button, oper-

able by the user's thumb, directly overset the spring. In each form after the glow member had been properly heated a thermostat pushed back the spring to its first position and broke the circuit, at the same time giving notice to the user by putting out a light. (The thermostat was not actuated by the heat of the glow member as in Mead, but by a separate resistance coil so timed as to break the circuit at the proper moment. That was, however, a difference of detail in design on which Mead's invention cannot rest.) It must be owned that Copeland's figure six did disclose a lighter, manually operated, which, once put in operation, did not require continued pressure, which automatically cut out the current when the glow member was hot enough, and which advised the user of that fact. Moreover, very few structural changes were necessary to convert this into Mead's lighter. The "tubular extension 16" (page 1, line 71), which held the glow member, was already removable; it was only [fol. 588] necessary to make it accessible to the user and to attach the wiring to the "tubular guide, 11" (page 1, line 62). When that was done, the holder would become a "wireless lighter" quite as much as Morris's or his successors'. This is the strength of the defendant's argument which prevailed in the Seventh Circuit (*Automatic Devices Corp. v. Sinko Tool & Mfg. Co.*, 112 Fed. (2) 335) and in the district court.

Nevertheless, it does not persuade us. Copeland's invention was still-born; it did not lead to the necessary modifications of Morris's lighter, nor did it suggest them; it was actually a step away from the "wireless" plug which is to be taken out, used like a match or a torch, and replaced, and which alone was capable of answering the needs of the art. Nor is it at all relevant that, after one had once thought of applying Copeland's arrangement to the plug type, the structural changes would have been simple. That is never the test; it is the conception that counts, the act of imagination which assembles the elements into the new and fruitful combination; not the working out of details. *Potts v. Creager*, 155 U. S. 597, 608; *Regar & Sons v. Scott & Williams*, 63 Fed. (2) 229, 231 (C. C. A. 2); *Patent Royalties Corp. v. Land O'Lakes Creameries*, 89 Fed. (2) 624, 627 (C. C. A. 2); *Kelley v. Coe*, 99 Fed. (2) 435, 440 (C. A. D. C.). Complicated machines, which are in the day's work for skilled mechanics, will appear magic to a tyro who may

find nothing but the obvious in a combination that has failed of discovery for a decade after the need arose. It would indeed be absurd to rate this as a major invention, yet it did bring to what appears to be its final form a contrivance which had become a standard fixture in motor cars; and upon every detail of these as much human ingenuity has been expended as perhaps on any machine. Just such trifles often help sales; in the severe competition of motor car industry the perfecting of even a trifling furnishing like this may be the object of study and experiment. The art itself shows that this has been true here, as we have already seen; [fol. 589] and the best test of what persons of routine ingenuity can do is what they have done. Perhaps, given the same technological stage of development, the same inventions are sure to appear and at about the same time, patents or no patents; but it is certainly unwarranted to assume that the small ones need less stimulus than the great ones; rather the contrary, for minds of the first order are more apt to express themselves without other inducement than the work itself. If patents are to go to those who contribute new appliances that are beyond the limited imagination of the ordinary skilled person, this invention seems to us to merit a patent.

The claims being valid and there being nothing in the prior art which requires it, we see no reason to circumscribe them closely to the disclosure. Verbally there is no difficulty. Invention lay in the general conception reduced, of course, to practice as shown but the range of equivalents should be as broad as the actual invention, as we have often said. There is nothing which turns primarily upon the precise details of the structure; the claims are good as they read, if good at all. We hold that they are valid and infringed.

As to the Cohen patent little need be said; here Mead is prior art and anticipates all that can be regarded as more than competent designing. We agree that the claims in suit are invalid.

As to Mead's patent, judgment reversed as to claims 2, 3 and 11 (plaintiff withdrew claim 1); as to Cohen's patent, judgment affirmed.

[fol. 590]

[File endorsement omitted]

IN UNITED STATES CIRCUIT COURT OF APPEALS FOR THE
SECOND CIRCUIT

[Title omitted]

PETITION FOR CORRECTIONS AND FOR REHEARING—Filed Feb-
ruary 17, 1941

To the Honorable the Judges of the United States Court
of Appeals for the Second Circuit:

Factual Corrections

The Court's opinion has been carefully studied and appears to us to contain factual errors which we feel sure the Court will wish to eliminate.

Page 672 of the printed opinion, line 5, we request that a comma be inserted after "ten" and after the comma the word sixteen inserted. Claim 16 of Cohen 2,117,232 was before the Court.

Page 672, line 9, before "installed" might be inserted commonly. There is nothing in the claims of Mead limiting the invention to an installation on a motor car. In fact, Mead did not wish his invention so limited, lines 27-33 of page 4 of Mead patent (T. R. p. 360).

Page 672, lines 9 and 10, we request that the words "heated by, or being itself" be deleted and the words consisting of substituted. The possibility of the resistance coil or glow member being heated by something else than [fol. 591] the passage of the electric current through it does not appear to be in either patent.

Page 672, line 11, we request that the words "from the igniter coil" be omitted. The electric current is derived from any battery or generator and not from any igniter coil. The current for the lighter is independent of any ignition system of any motor car.

Page 672, lines 13 and 14, we request that the words "igniter coil" be removed and in place thereof the words the battery substituted for the reasons mentioned above in the preceding paragraph.

Page 672, lines 20 and 21, we request that "out of the circuit" be struck out and the words mechanically discon-

nected from the current supply wires substituted. When the circuit is broken as mentioned in line 18 of the Court's printed opinion the plug of a reel type lighter is out of the circuit.

Page 673, we request that all of line 2 and the words "was not to be heated, and that" in line 3 be removed. There was no problem or difficulty to avoid closing the circuit when the glow member was not to be heated, because the resistance of the spring (such as shown in Morris) referred to in lines 5 and 6 from the bottom of page 672 of the printed opinion would keep the plug from a circuit closing position.

Page 673, line 6, we request that "when the plaintiff began to make them" be cancelled. The record fails to show that the plaintiff ever manufactured any cigar lighters. It is a paper company—and receives no royalty or share of returns.

Page 673, line 6, we request that the comma after "1928" be changed to a period and the remainder of the sentence cancelled. The record is silent as to any great demand and as to any extensive competition in 1927 or 1928. Plaintiff's licensee, Casco Products Corporation, began the manufacture of non-automatic wireless lighters "about 1927 and 1928" (T. R. p. 94, fol. 282). It was not until 1928 and 1929 that competition became substantial (T. R. p. 96, fols. [fol. 592] 286, 287) in the manual type cordless lighters independently of Mead (T. R. p. 96, fol. 288). The chart (T. R. p. 381) shows sales of the manual type lighters (not Mead) beginning in 1934 and due to improvements later than Mead. All lighters included in this sales chart were manual or cordless or wireless type cigar lighters.

Page 673, line 17, greater accuracy would be obtainable if the following sentence be added at the end of the paragraph:

"The record shows that cordless lighters continued until the early thirties to be the subject of attempts at refining and improving them" (T. R. p. 381).

(See Wolfson 1,980,157 filed April 10, 1931, and Ashton Ford type lighter 2,060,783 filed October 8, 1934.)

Page 674, line 6, the patent number should be "1,844,206" and the date "April 18, 1927" (T. R. p. 489). It seems quite certain these are typographical errors.

Page 674, line 8, the date should be corrected to agree with the date in line 6 of the same page.

Page 675, lines 1 to 7, we do not read the Seventh Circuit opinion in the same way or feel that our argument was understood. The Mead claims do not require the supply wires to be disconnected as in a cordless lighter but are broad enough to include a reel type cord lighter as well as a cordless type lighter. *Automatic Devices Corp. v. Sinko Tool & Mfg. Co.*, 112 F. (2d) 335 (340-341), C. C. A. 7 Mead makes no mention of the so-called advantages of a "wireless" or "cordless" lighter, expressly asked that his invention not be limited to the form shown (see lines 23 to 33, p. 4 of the patent T. R. p. 360), and nowhere indicated his desire for it to be limited to cordless lighters.

The Seventh Circuit Court held:

"we think his (Mead's) disclosures amounted to nothing more than mechanical skill and we think the claims herein relied upon are invalid" (p. 341, 112 Fed. Rep., 2nd Series).

[fol. 593] This statement followed a considerable discussion of the art not confined to Copeland or Morris. The Seventh Circuit Court also held:

"If there is novelty in the disclosures (of Mead) it must relate to the means which operate as a result of the rotary pressure, aside from the ultimate result of closing the switch, and we think the claims must be construed rather narrowly in order to avoid the prior art, if possible" (p. 340).

It is our contention that no invention was involved broadly in applying a thermostat and latch to such devices as Morris or employing direct heat from the coil in view of Copeland and other automatic heaters as found by the District Court (see T. R. p. 559) and that the Cuno lighter is radically different from the Mead disclosure and therefore does not infringe the vague and unclear claims in suit.

Claim 1 was obviously not infringed in its very terms as found by the District Court and was dropped at the argument before this Court. Claim 2 would have been more easily understood if read following claim 1 where there is similar wording. We have reference particularly to "means for moving said heating member" which according to claim 1 is "on said base member". Plaintiff contended that this was the knob and the District Court said:

"It is not sensible to direct this reference as plaintiff would have me do to the knob on the plug" (T. R. p. 557).

The District Court in Connecticut held:

"I have serious doubt whether Mead transcended the realm of design; whether in essence he did more than produce a new design for old parts having familiar functions, arranging for the co-operation of the several parts by means thoroughly familiar to one skilled in the general art of portable electrical appliances. But in any event, it is clear to me that if Mead's disclosure involved invention the only inherent invention was confined to the correlative arrangement [fol. 594] ment of the numerous parts which he used. Against the background of the prior art, his arrangement was not entitled to a broad range of equivalents. And the defendant has used a simplified and improved arrangement, dispensing with some of the parts which Mead found necessary" (T. R. pp. 566-567).

Page 675, lines 28 and 29, we request that the words "to what appears to be its final form" be struck out because contrary to the evidence. Not only was Mead's rotary socket and plug device unsuccessful with the spring inside the socket as shown in Fig. 15 (T. R. p. 249, fol. 747) but the form attempted to be marketed with a spring outside the socket where it was cooler was also unsuccessful (T. R. p. 127, fol. 380, and T. R. p. 251, fol. 753). Instead of the Mead device being anything like "final form", Mr. Cohen, the president of plaintiff's licensee, Casco Products Corporation, testified he had to make over 100 experiments before he got a successful and final form (T. R. p. 97, fol. 290), and put the Casco device on the market in 1936. Even then he had to follow Wolfson 1,980,157 (T. R. p. 497) owned by defendant-appellee (see the drawing in the appendix to plaintiff's brief). Plaintiff's licensee, Casco Products Corporation, was formerly licensed under this Wolfson patent.

Page 675, line 30. There was no evidence of the wireless lighter in any form having been either "a standard fixture in motor cars" or standard equipment before the Mead filing date. Plaintiff's licensee, Casco Products Corporation, began their manufacture "about 1927 and 1928" (T. R. p. 94, f. 282) and attracted competition in 1928 and 1929 (T. R. p. 96, ff. 286, 287), but not on the Mead device.

Page 676, in next to the last line, we request that after "reversed" and before the semi-colon the following be inserted—as to claims 2, 3 and 11 and affirmed as to claim 1.

Claim 1, which the District Court found not infringed, was included in the appeal but was dropped at the moment of argument of the appeal and therefore as to this claim judgment should be affirmed.

[fol. 595] Cohen's patent 2,140,311 was also included in the appeal but was dropped when the brief was filed. As to this patent we request that the judgment of the District Court be affirmed.

Petition for Rehearing as to the Mead Patent

The Court's opinion in this case is believed inconsistent with opinions of the United States Supreme Court and with a number of opinions of this Court or Appeals for the Second Circuit.

1. This opinion is believed contrary to the authority of *Permutit Co. v. Graver Co.*, 284 U. S. 52 (58, 60), because this opinion seems to have limited the claims of the Mead patent to a cordless or wireless type lighter. There is nothing in the claims in suit or the specification of the Mead patent about cordless or wireless lighters. We understand the Supreme Court to have ruled in the foregoing case that it was improper to limit a claim by the drawing only. The specification of Mead and the claims in suit are broad enough to cover other types than cordless lighters. This same rule has previously been applied by this Court, *Typewriters Hilliardized v. Corona Typewriter Co.*, 43 F. (2d) 961 (964), and also by the Supreme Court, *Howe Machine Co. v. National Needle Co.*, 134 U. S. 388 (397).

2. The Mead rotary plug and socket device was not successful. It made no substantial imprint upon the practical art. A great deal of development was later required before a radically different and successful device was obtained in 1936, and then only with the aid of the invention of defendant's Wolfson patent 1,980,157. It has been held that to give a broad construction to an impracticable device and make the inventor of a successful device pay tribute to one who does not substantially advance the art tends to discourage rather than promote the useful arts. *Deering v. [fol. 596] Winona Harvester Works*, 155 U. S. 286 (295); *Lovell v. Seybold Mach. Co.*, 169 Fed. 288 (290) (C. C. A. 2).

The Court holds that "it is the conception that counts" and "Invention lay in the general conception reduced, of course, to practice as shown". We had supposed that this was not sufficient—but that the concept must be accompanied at least by a successful solution, which is not the case here. As we understand *Potts v. Creager*, 155 U. S. 597, 608, the defendant used substantially the same machine as the patent disclosure. In *Regar & Sons v. Scott & Williams*, 63 F. (2d) 229, 231 (C. C. A. 2), the patent was held invalid. In *Patent Royalties Corp. v. Land O'Lakes Creameries*, 89 F. (2d) 624, 627 (C. C. A. 2), and *Kelley v. Coe*, 99 F. (2d) 435, 440 (C. A. D. C.), there was almost immediate successful adoption.

3. In order that the Mead device may function in the manner described in lines 20 to 23 of page 673 of the printed opinion, this Court has found it necessary to interpret it as having a latch (not required by the claims) "so that they should hold their position after they have been manually made to close the circuit" (lines 19 to 21, p. 673 of the opinion). This Court has previously said it is improper to imply into a claim a limitation not expressly found, when that limitation is found in other claims, *Kennedy v. Trimble*, 99 F. (2d) 786 (788, column 1); *Electric Machinery Mfg. Co. v. General Electric Co.*, 88 F. (2d) 11 (16). Claims 6, 8, 9, 10, 13 and 15, for example, expressly include the latch or equivalent means so that it should not be proper to say the inventor intended a latch to be implied in other claims.

In order that Mead "should give notice that the plug was ready for use" either visually by movement of the plug or audibly by such movement impinging upon a stop or abutment, it is necessary to read into claims 2 and 3 a limitation to a spring or other means for moving the plug, when such limitation is not found therein but occurs in other [fol. 597] claims, such for example as 6, 10, 11, 12, 13, 14 and 15.

Without the spring and latch being included, the claims are incomplete, not directed to a wireless type lighter, vague, and a mere double use of a thermostat to open an electric heater circuit.

4. Even if the Mead patent were to be regarded as valid it would seem desirable for this Court to consider the radical difference in construction, including the lack of movement of the glow member in defendant-appellee's construc-

tion, which the Seventh Circuit Court of Appeals believed sufficient to warrant a finding of non-infringement, 112 F. (2d) 335 (340), by Sinko's lighter which counsel for appellant has said was "substantially similar" to the Cuno lighter.

Wherefore, defendant-appellee requests either a rehearing or a reconsideration by this Court of its opinion of the Mead patent in view of the foregoing authorities.

Respectfully, Hyland R. Johns, Attorney for Defendant-Appellee.

Robert S. Allyn, of Counsel.

[fol. 598] IN UNITED STATES CIRCUIT COURT OF APPEALS FOR
THE SECOND CIRCUIT

AUTOMATIC DEVICES CORPORATION, Appellant,

v.

THE CUNO ENGINEERING CORPORATION, Appellee

February 27, 1941

Before L. Hand, Augustus N. Hand and Chase, Circuit
Judges

Robert S. Allyn for the appellee.

Per CURIAM:

Petition for rehearing denied.

C. J. J.

[fol. 599] IN UNITED STATES CIRCUIT COURT OF APPEALS,
SECOND CIRCUIT

AUTOMATIC DEVICES CORP., Plaintiff-Appellant,

v.

THE CUNO ENGINEERING CORP., Defendant-Appellee

ORDER DENYING PETITION FOR REHEARING—Filed February
27, 1941

A petition for a rehearing having been filed herein by counsel for the appellee,

Upon consideration thereof, it is

Ordered that said petition be and hereby is denied.

D. E. Roberts, Clerk.

[fol. 600] [File endorsement omitted.]

[fol. 601] IN UNITED STATES CIRCUIT COURT OF APPEALS,
SECOND CIRCUIT

AUTOMATIC DEVICES CORP., Plaintiff-Appellant,

v.

THE CUNO ENGINEERING CORP., Defendant-Appellee

JUDGMENT—Filed March 10, 1941

Appeal from the District Court of the United States for the
District of Connecticut

This cause came on to be heard on the transcript of record from the District Court of the United States for the District of Connecticut, and was argued by counsel.

On Consideration Whereof, it is now hereby ordered, adjudged, and decreed that the judgment of said District Court be and it hereby is reversed as to Mead's patent and affirmed as to Cohen's patent.

It is further ordered that a Mandate issue to the said District Court in accordance with this decree.

D. E. Roberts, Clerk.

[fol. 602] [File endorsement omitted.]

[fol. 603] Clerk's Certificate to foregoing transcript omitted in printing.

[fol. 604] SUPREME COURT OF THE UNITED STATES

ORDER ALLOWING CERTIORARI—Filed April 14, 1941

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the Second Circuit is granted, limited to the question whether claims 2, 3, and 11 of the Mead patent No. 1,736,544 are valid, and the case is assigned for hearing immediately following No. 277.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.

FILE 1-1-1
SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1940

No. ~~851~~ 37

THE CUNO ENGINEERING CORPORATION,
Petitioner,

vs.

THE AUTOMATIC DEVICES CORPORATION.

PETITION FOR WRIT OF CERTIORARI TO THE
UNITED STATES CIRCUIT COURT OF APPEALS
FOR THE SECOND CIRCUIT AND BRIEF IN SUP-
PORT THEREOF.

✓ ROBERTS B. LARSON,
Counsel for Petitioner.

ROBERT STARR ALLYN,
HYLAND R. JOHNS,
Of Counsel.

INDEX.

SUBJECT INDEX.

	Page
Petition for writ of certiorari	1
Summary and short statement of matter involved	1
Jurisdiction	2
Questions presented	3
1. Diversity of opinions on validity in the Second and Seventh Circuit Courts of Appeal	3
2. Narrow construction for unsuccessful pat- ent construction	3
3. Importing elements in other claims	3
4. Importing limitation from drawing	3
5. Diversity of opinions on infringement in the Second and Seventh Circuit Courts of Appeal	4
Reasons relied on for allowance of writ	4
Prayer	7
Brief in support of petition	8
Opinions of the courts below	8
Jurisdiction	9
Statement of case	9
Specification of errors	9
Summary of argument	10
Argument	10
1. Mead patent should be invalid	10
2. Patent for an unsuccessful device should not be construed to cover later, differ- ent and successful construction	12
3. Features from description should not be imported when found in other claims	14
4. Claims should not be limited by drawing	15
5. Neglect to consider expressed limitations	16
6. Factual errors	17
7. Claims vague and not statutory	18
Conclusion	19

TABLE OF CASES CITED.

	Page
<i>Automatic Devices v. Cuno Engrg.</i> , 34 F. S. 144	2
<i>Automatic Devices v. Cuno Engrg.</i> , 34 F. S. 146	2, 8
<i>Automatic Devices v. Sinko Tool & Mfg. Co.</i> , 112 F. (2d) 335 C. C. A. 7	4, 16
<i>Automatic Devices v. Sinko Tool & Mfg. Co.</i> , 311 U. S. (Ad. Sh.) XXI, No. 277 October Term 1940	2, 9
<i>Deering v. Winona</i> , 155 U. S. 286 (39 L. E. 153)	3, 7, 10, 12
<i>Electric Mach. v. General Electric</i> , 88 F. (2d) 11 C. C. A. 2	5, 14
<i>General Electric v. Wabash</i> , 304 U. S. 364	19
<i>Howe Mach. Co. v. National Needle Co.</i> , 134 U. S. 388	6
<i>Kennedy v. Trimble</i> , 99 F. (2d) 786 C. C. A. 2	5, 14
<i>Lovell v. Seybold</i> , 169 Fed. 288 C. C. A. 2	7, 12
<i>Merrill v. Yoemans</i> , 94 U. S. 56 (24 L. E. 235)	19
<i>Motoshaver v. Schick</i> , 112 F. (2d) 701	5, 14
<i>Permutit v. Graver</i> , 284 U. S. 52 (76 L. E. 163), 3, 6, 10, 15, 19	
<i>Powers-Kennedy v. Concrete Mixing</i> , 282 U. S. 175 (75 L. E. 278)	11, 12
<i>White v. Converse</i> , 20 F. (2d) 311	14

STATUTES CITED.

Judicial Code, Sec. 24(7), (R. S., Sec. 629, par. 9; March 3, 1911, c. 231, Sec. 24, par. 7, 36 Stat. 1092)	3
Judicial Code, Sec. 240(a), as amended by the Act of February 13, 1925	2
Revised Statutes, Sec. 4888 (35 U. S. C. 33)	5, 10, 18

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1940

No. 851

THE CUNO ENGINEERING CORPORATION,

Petitioner,
vs.

THE AUTOMATIC DEVICES CORPORATION.

**PETITION FOR A WRIT OF CERTIORARI TO THE
UNITED STATES CIRCUIT COURT OF APPEALS
FOR THE SECOND CIRCUIT.**

*To the Honorable Chief Justice and Associate Justices
of the Supreme Court of the United States:*

Your petitioner, The Cuno Engineering Corporation, defendant, respectfully prays that a writ of certiorari issue to the United States Circuit Court of Appeals for the Second Circuit to review a judgment of that court entered March 10, 1941 (R. 598).

Summary and Short Statement of the Matter Involved.

This is a suit brought by the respondent, a patent holding company, against petitioner, a manufacturer, in the United States District Court for the District of Connecticut for alleged infringement of claims 1, 2, 3 and 11 of the Mead

patent 1,736,544 dated November 19, 1929, claims 3 and 20 of the Cohen patent 2,140,311 dated December 13, 1938, and claims 1, 2, 10, 16 and 18 of the Cohen patent 2,117,232 dated May 10, 1938. Each patent relates to an electric cigar lighter having a thermally actuated switch for opening the circuit.

The only matters involved in this petition are the questions of validity and infringement of claims 2, 3 and 11 of the Mead patent which were held invalid and not infringed by the Sinko lighter in the case of *The Automatic Devices Corporation v. Sinko Tool & Manufacturing Company* by the Circuit Court of Appeals for the Seventh Circuit, 112 F. (2d) 335 (340), (Petition for Writ of Certiorari denied on October 14, 1940, 311 U. S. [Ad. Sh.] XXI, No. 277 October Term, 1940). In the instant case these claims were held valid and infringed by the Circuit Court of Appeals for the Second Circuit (not yet reported) which reversed the decree of the United States District Court for the District of Connecticut, 34 Fed. Supp. p. 146. There was a denial of a motion for preliminary injunction (34 Fed. Supp. p. 144).

The District Court found all of the Cohen claims invalid and the Mead claims of doubtful validity and not infringed.

Respondent on appeal dropped the Cohen patent 2,140,311 and claim 1 of the Mead patent. The Circuit Court of Appeals for the Second Circuit affirmed the District Court as to the Cohen patent 2,117,232 and reversed it as to Mead 1,736,544.

Our petition for corrections of factual errors and for a rehearing as to Mead was denied February 27, 1941 (R. 597).

Jurisdiction.

The jurisdiction of this Court is invoked under Section 240 (a) of the Judicial Code as amended by the Act of Feb-

ruary 13, 1925. This is a suit arising under the patent laws, Judicial Code Sec. 24(7) (R. S. Sec. 629, par. 9; Mar. 3, 1911, c. 231, Sec. 24, par. 7, 36 Stat. 1092).

The date of the judgment which petitioner seeks to have reviewed is March 10, 1941 (R. 598).

Questions Presented.

1. Whether claims 2, 3 and 11 of the Mead patent 1,736,544 are valid as decided by the Court of Appeals for the Second Circuit or whether these same claims are invalid as decided by the Circuit Court of Appeals for the Seventh Circuit?

2. Shall a paper patent be construed to block progress in the art to which the patent relates, and shall the much later commercial success of a very different, well advertised device be used to support the patentability of a device an improved form of which was tried on the market and failed seven years before? The decision of the Circuit Court of Appeals for the Second Circuit seems in conflict with the decision of this Court in *Deering v. Wixona Harvester Works*, 155 U. S. 286 (295) and its effect stifles rather than promotes the useful arts.

3. Whether the requirements of the statute (R. S. 4888) that an invention must be particularly pointed out and distinctly claimed in a patent have been complied with in the claims of Mead in suit when elements not in said claims, but required for successful operation, are expressed in other claims and have been implied into these claims in suit in order to find them valid?

4. Whether the decision of the Circuit Court of Appeals for the Second Circuit does not conflict with the ruling of this Court in *The Permutit Co. v. Graver Corp.*, 284 U. S. 52 (58, 60) by reason of the Mead patent having been arbitrarily construed by the Circuit Court of Appeals for the

Second Circuit as for a basic improvement in cordless or wireless lighters when there is nothing in the specification or the claims in suit to require such construction? Such limitation was imported into the claims from the drawing; the claims were not intended to be limited to the embodiment illustrated, and the specification and claims were in language broad enough to cover other than wireless type lighters.

5. Whether a paper patent on an unsuccessful device should be construed to cover a later successful device and thus stifle rather than promote progress in the useful arts? Does petitioner's (defendant's) device infringe the Mead patent claims 2, 3 and 11, or, since respondent has admitted that the accused constructions before the Second and Seventh Circuit Courts of Appeal are "substantially similar", does it not avoid infringement for the reasons given by the Circuit Court of Appeals for the Seventh Circuit?

Reasons Relied On for the Allowance of the Writ.

Petitioner prays the writ to be allowed because:

1. The decision of the Circuit Court of Appeals for the Second Circuit holding claims 2, 3 and 11 of the Mead patent 1,736,544 to be valid, is in direct conflict with the decision of the Circuit Court of Appeals for the Seventh Circuit, holding the same claims to be invalid in the case of *The Automatic Devices Corporation v. Sinko Tool & Manufacturing Company*, 112 F. (2d) 335. If this conflict continues petitioner will be stopped in its automatic cigar lighter business whereas its competitor Sinko Tool & Manufacturing Company has been judicially freed.

2. The record shows that Mead made some sort of a device experimentally but no device as shown and described in the Mead patent was ever sold. An improved form was sold for a short time in 1928 and possibly 1929 but dis-

continued as it was not a success (R. 249, R. 127, R. 251). In 1936 after a hundred experiments were made as testified to by the President of Plaintiff's licensee a very different device was put out by the Casco Products Corporation and advertised extensively. A so-called automatic lighter merely involves the addition of an old thermostatic latch to an old wireless plug type lighter. Such latches for other electric heater switches were old and a thermostatic latch for a cigar lighter switch was known before Mead and thermostatic switches of the exact type used by the defendant-petitioner were old prior to Mead.

3. It is not fair or conducive to certainty in the public's search for the limits of an invention in a patent claim to know that almost any feature from the description or drawing may be implied into a claim regardless of the fact that the inventor has manifested an intent not to do so by expressing such limitation in another claim. The Circuit Court of Appeals for the Second Circuit in effect read into the Mead claims limitations to the latch and spring not required by said claims but necessary for the purpose found by the Circuit Court of Appeals and expressed in other claims although the practice has been condemned. *Electric Machinery Mfg. Co. v. General Electric Co.*, 88 F. (2d) 11 (16), C. C. A. 2; *Kennedy v. Trimble*, 99 F. (2d) 786 (788) C. C. A. 2; *Motoshaver, Inc. v. Schick Dry Shaver*, 112 F. (2d) 701 (706) C. C. A. 9. We do not believe such a practice to be a compliance with the patent law (R. S. 4888). So far as is known, this Court has never directly ruled on this specific point.

4. The Circuit Court of Appeals for the Second Circuit has construed the Mead patent as for the final form of a successful wireless type lighter, when there is nothing in the specification or in the claims in suit about wireless lighters. No advantages of a wireless type lighter are re-

ferred to in the Mead patent. The drawing or illustration is the only foundation for such a construction. This Court has ruled in *Permutit Co. v. Graver Co.*, 284 U. S. 52 (58, 60) that such a construction does not comply with the statutory requirements for distinctly claiming the invention in a manner to notify the public of the extent of the invention. To the same effect is *Howe Machine Co. v. National Needle Co.*, 134 U. S. 388 (397). The Mead patent expressly states that it is not to be limited to the form illustrated (lines 27 to 33, page 4 of the Mead patent, R. 360) and the claims are vague enough to cover other types of lighters than the wireless kind.

5. Plaintiff-respondent formerly petitioned for a writ of certiorari to the Circuit Court of Appeals for the Seventh Circuit in the case of *The Automatic Devices Corporation v. Sinko Tool & Manufacturing Company* and in an affidavit in support of its motion to withhold notice of denial of petition for certiorari counsel alleged that the accused devices in the Seventh Circuit Sinko case and in this Second Circuit Cuno case were "substantially similar". The Circuit Court of Appeals for the Seventh Circuit found the Mead patent should not be construed to cover all types of automatic wireless lighters, although the Circuit Court of Appeals for the Second Circuit has in effect construed the Mead patent that broadly. One reason for non-infringement of these same claims found by the Circuit Court of Appeals for the Seventh Circuit (112 F. (2d) 335 (340)) was:

"We think the claims do not read upon the accused device in that defendant's heating member after insertion is not movable on a support to a position where the heating unit is energized."

The Sinko and Cuno lighters are identical in this respect, but such does not seem to have been considered by the Circuit Court of Appeals for the Second Circuit. To require

defendant-petitioner who has benefited the art with a successful device to pay tribute to the owner of a different and unsuccessful paper patent is what the Circuit Court of Appeals for the Second Circuit has done and what this Court has said tends to obstruct the development of the useful arts, *Deering v. Winona Harvester Works*, 155 U. S. 286 (295); *Lovell v. Seybold Mach. Co.*, 169 Fed. 288 (290) C. C. A. 2.

Prayer.

Wherefore your petitioner respectfully prays that a writ of certiorari be issued to the United States Circuit Court of Appeals for the Second Circuit to the end that this cause may be reviewed and determined by this Court; that the judgment of the Circuit Court of Appeals for the Second Circuit be reversed; and that petitioner be granted such other and further relief as may be proper.

ROBERTS B. LARSON,
Counsel for Petitioner.

ROBERT STARR ALLYN,
HYLAND R. JOHNS,
Of Counsel.

SUPREME COURT OF THE UNITED STATES
OCTOBER TERM, 1940

No. 851

THE CUNO ENGINEERING CORPORATION,
vs. *Petitioner,*

THE AUTOMATIC DEVICES CORPORATION

**BRIEF IN SUPPORT OF PETITION FOR WRIT OF
CERTIORARI.**

Opinions of the Courts Below.

The opinion of the United States District Court for the District of Connecticut was filed June 7, 1940 (R. 567) and is reported 34 Fed. Supp. 146.

The opinion of the Circuit Court of Appeals for the Second Circuit was decided February 3, 1941 (R. 584) and has not yet been reported so far as is known. Judgment was entered March 10, 1941. (R. 598).

The opinion of the Circuit Court of Appeals for the Seventh Circuit holding the Mead patent invalid and not infringed in the case of Automatic Devices Corp v. Sinko Tool and Mfg. Co. is reported 112 F. (2d) 335. The opinion of

the United States District Court for the Northern District of Illinois in the Sinko case has not been reported so far as is known. (Petition for Writ of Certiorari denied on October 14, 1940, 311 U. S. [Ad. Sh.] XXI, No. 277 October Term, 1940).

Jurisdiction.

Stated in the petition (page 2).

Statement of the Case.

The foregoing petition contains a statement of the material facts, as well as a statement of the questions involved.

Specification of Errors.

1. The Circuit Court of Appeals for the Second Circuit erred in finding and holding the Mead patent 1,736,544 was valid as to the claims in suit, numbers 2, 3 and 11.

2. The Circuit Court of Appeals for the Second Circuit erred in arbitrarily construing the patent on the unsuccessful Mead device to cover the successful construction of defendant-petitioner brought out about ten (10) years later.

3. The Circuit Court of Appeals for the Second Circuit erred in finding the Mead claims in suit to include a different cigar lighter that holds its position after being manually moved to close the circuit (Opinion, R. 584 at 586); and also in holding these claims to be directed to a lighter that should give notice that the plug was ready for use (Opinion, R. 584 at 586).

4. The Circuit Court of Appeals for the Second Circuit erred in construing the Mead patent as for cordless or wireless lighters when there is nothing in the specification or the claims in suit to require such limitation imported only from the drawing.

5. The Circuit Court of Appeals for the Second Circuit erred in finding and holding the very different accused device of defendant-petitioner to infringe the Mead claims in disregard of expressed differences in such claims.

6. The Circuit Court of Appeals for the Second Circuit erred in basing its opinion upon the number of facts contrary to the finding of the trial court and contrary to the evidence as pointed out in the "Petition for Corrections", "Factual Corrections", (R. 589).

7. The Circuit Court of Appeals for the Second Circuit erred in not holding and finding the Mead claims in suit to be invalid for their failure to comply with section 4888 R. S.

Summary of Argument.

The opinion of the Circuit Court of Appeals for the Seventh Circuit should be followed on the questions of validity and infringement of the Mead patent. The opinion of the Circuit Court of Appeals for the Second Circuit as to the Mead patent is contrary to the opinion of this Court in *Deering v. Winona Harvester Works*, 155 U. S. 286 (295) and in *Permutit Co. v. Graver Co.*, 284 U. S. 52 (58, 60) was based upon other errors including numerous factual errors (R. 589, Petition for Corrections and for Rehearing).

ARGUMENT.

1. The Circuit Court of Appeals for the Second Circuit erred in finding Claims 2, 3 and 11 of the Mead Patent valid.

The Circuit Court of Appeals for the Seventh Circuit in its opinion in *Automatic Devices Corp. v. Sinko Tool & Manufacturing Company*, 112 F. (2d) 335, found that wireless type lighters were old in *Zeechini* 1,437,701 (R. 454), that *Copeland* 1,844,206 who filed before Mead (R. 489) showed an electric cigar lighter having a thermostatic switch

for opening the circuit, that what Mead did was to apply an old thermostatic switch to another known type of heater, and that such was nothing more than mechanical skill.

The Circuit Court of Appeals for the Second Circuit seems to have regarded Copeland as "still born" ~~by~~ which we assume that it was not worthy because it did not affect the practical art. Mead as shown and described was also "still born". It was unsuccessful as is referred to more in detail later, and even if the criticism of Copeland be true, such should not preclude its use and pertinency to show anticipation. The Circuit Court of Appeals for the Second Circuit failed to appreciate that no change was necessary in order for the Mead claims in suit to read literally on Fig. 2 of Copeland 1,844,206. Thermostatic cut out switches were old on a wide variety of electric heaters such as sad irons, (Denhard 1,143,572 R. 427), coffee-cookers, (Newsom 1,318,168 R. 438), toasters, (Hurxthal 1,540,628 R. 461), and the reason why this old expedient was not common long before for still another sort of electric heater, the wireless cigar lighter, ~~was~~ because the wireless lighter was only just becoming commercially common and there was no demand for it. Plaintiff-respondent's licensee began its manufacture of wireless lighters about 1927 or 1928 (R. 94) and attracted competition in 1928 or 1929 (R. 96). The Circuit Court of Appeals for the Second Circuit was in error (Opinion, R. 584 at 587) in believing the non-automatic or manual type wireless lighter had become standard equipment before or because of the Mead invention. Thermostatic wireless cigar lighters did not appear in quantity or as standard equipment until plaintiff-respondent's licensee brought out its lighter of a construction very different (R. 404) from Mead, in 1936. The use of a thermostatic cut out switch on another type of electric heater from those on which it had been used before should not amount to invention, *Powers-Kennedy Construction Corp. v. Concrete*

Mixing & Conveying Co., 282 U. S. 175 (180). Conception of an idea has never been regarded as a contribution to the art unless expressed in a useful form which is not the case in the Mead patent.

2. A patent for an unsuccessful device should not be construed to cover a later, different, and successful construction.

If a paper patent on an unsuccessful device is to be construed broadly to cover a very different and later successful construction, produced only after a considerable development effort, then such practice will impede rather than promote the industrial arts as intended by the constitution, *Deering v. Winona Harvester Works*, 155 U. S. 286 (295); *Lowell v. Seybold Mach. Co.*, 169 Fed. 288 (290) C. C. A. 2. That is the situation here. The Mead device as shown in the patent drawing was never sold. (R. 249, 250), the District Court asked of plaintiff-respondent's witness:

"Q. Now do you explain the fact that you say this model was first made and the invention developed in 1926, and yet nothing appears to have been done about patenting the invention until after that company had sold out to Jessop a year later?

A. Well, I don't know; I couldn't explain that. We had no money to get a patent. It costs quite a bit of money and we were putting our time—I wasn't getting paid for my time outright. I would have *if it had been a success*. * * * (italics ours).

A form improved over that shown in the Mead patent drawing and having a spiral bimetal throwing spring outside and around the socket where it was cooler, was also unsuccessful, (R. 127):

"And he told me that he was very much disappointed and disgusted by the fact that practically all of them

came back after having been used a few times." (Cuno's testimony of Mead's statement to him).

(R. 251):

"Q. Mr. Head, you said that you had had considerable trouble with the thermostatic metal and later got a type that suited you better? A. Yes."

.

"I think the thermostatic metal we did try did not work satisfactory to us and we did not continue."

Plaintiff-respondent's witness who was president of its licensee manufacturer, testified they had to try out over a hundred improvements before getting a successful lighter (R. 96, 97):

"Q. After you had seen this Mead lighter, what did you do then in regard to lighters? A. At that particular time, why, I did not think a great deal of the lighter as it was. . . ."

.

"And I could easily produce in this Court a hundred more various types that we made before we actually made a successful lighter."

This shows the error of the Circuit Court of Appeals for the Second Circuit in saying (Opinion, R. 584 at 587) that the Mead invention brought the automatic wireless lighter "to what appears to be its final form".

The lighter of plaintiff-respondent's licensee embodies the details of defendant-petitioner's Wolfson patent 1,980,157 (R. 497) with the addition of a latch to hold the plug in closed circuit position. The lighter of defendant-petitioner, however, keeps the ignited stationary and only moves a sliding switch member to engage a latch.

3. It was error to read into the Mead claims, features from the description that are found in other claims.

A patent has been said to be a contract with the Government. *White v. Converse*, 20 F. (2d) 311 (313) C. C. A. 2. It should violate principles of contract construction to imply features into some parts of a document when the maker manifests an intent that such features should be omitted, by expressing them elsewhere, yet that is what the Circuit Court of Appeals for the Second Circuit has done. The feature of a latch does not occur in any of the Mead claims in suit. The purpose of the latch in the Mead construction is to hold the circuit closed automatically without manually having to hold the switch closed as had been necessary with the non-automatic wireless lighters. The opinion of the Circuit Court of Appeals for the Second Circuit found the advantage of the latch to be present in the Mead claims in suit when they said—

“So far as appears, nobody in this country before Mead made ‘wireless’ lighters automatic; that is to say, so that they should hold their position, after they had been manually made to close the circuit.” (Opinion, R. 584 at 585).

Implying the function or advantage of the latch into the Mead claims in suit is in effect implying the structural element responsible for that function or advantage into the claims. Mead expressly wished the latch included in claims 6, 8, 9, 10, 13 and 15, and did not desire the latch or its advantage included in the claims in suit. To imply a feature into a claim when that feature is expressed in other claims has been condemned. *Motoshaver Inc. v. Schick Dry Shaver*, 112 F. (2d) 701 (706) C. C. A. 9; *Kennedy v. Trimble*, 99 F. (2d) 786 (788) C. C. A. 2; *Electric Machinery Mfg. Co. v. General Electric Co.*, 88 F. (2d) 11 (16) C. C. A. 2. So far as is known this Court has not ruled on this specific point.

In the same way the spring or its equivalent was implied into claims 2 and 3 because the Circuit Court of Appeals for the Second Circuit found the function and advantage of the spring present in these claims when they found structure of the Mead claims in suit adapted to

“give notice that the plug was ready for use”

(Opinion, R. 584 at 585). A spring would be necessary to give this notice either visually or audibly in Mead by moving the plug away from its closed circuit position and against an abutment or stop. The spring or its equivalent is expressed in Mead claims 6 and 10 to 15. It should not have been imported into those claims where it is not expressed. The “signal” idea is not mentioned in Mead and in practice is inconsequential.

4. It was error to have limited the Mead claims in suit by the drawing.

The Circuit Court of Appeals for the Second Circuit found the Mead claims in issue to be directed to an automatic wireless type cigar lighter (Opinion, R. 584 at 585, 586, 587). But there is not a word in the specification of Mead or in the claims in suit about the advantage of wireless or cordless type lighters or such known by any other name. The specification was expressly not limited to the form shown and described, (R. 360, lines 27 to 33). The only place where such a limitation could have been found was from the drawing. However this Court has said it is improper to limit a claim by what is shown in the drawing and not in the specification, because the invention would then not have been particularly pointed out and distinctly claimed as the law requires. *Permutit Co. v. Graver Co.* 34 U. S. 52 (58, 60). Therefore the Mead claims should not have been held directed to a wireless type lighter. With-

out a spring or its equivalent imported into the claims 2 and 3, they could not be for a wireless type lighter which was able to give the notice mentioned, and without a latch imported into claims 2, 3 and 11 of Mead, these would not have been directed to a lighter which possessed the stated advantages over the prior manual type of wireless lighters.

5. The Circuit Court of Appeals for the Second Circuit neglected to consider express limitations in the Mead claims, which the Circuit Court of Appeals for the Seventh Circuit regarded as sufficient to find non-infringement.

In an affidavit by Counsel for plaintiff-respondent attached to its Motion to Withhold Notice of Denial of Petition for Certiorari, with Accompanying Affidavit, before this Court in the case of *The Automatic Devices Corp. v. Sinko Tool and Manufacturing Co.*, October Term, 1940, No. 277, the accused device of Sinko Tool and Mfg. Co. was claimed to be "substantially similar" to the accused device of The Cuno Engineering Corp., the defendant-petitioner herein. In each of the accused devices, the resistance or heater element remains stationary in the socket. It is not moved in opening and closing the circuit. A switch member only is moved to open and close the circuit. The Circuit Court of Appeals for the Seventh Circuit said in its Opinion in *The Automatic Devices Corp. v. Sinko Tool and Mfg. Co.*, 112 F. (2d) 335 (340 column 2):

"We think the claims do not read upon the accused device in that defendant's heating member after insertion is not movable on a support to a position where the heating unit is energized."

Claim 2 calls for "means for moving said heating member to a position for establishing an energizing circuit to said heating unit" (R. 360). The Sinko lighter has no such element. The Cuno lighter has no such element.

Claim 3 calls for "said heating member being movable on said support to a position where said heating unit is energized".

Claim 11 requires "said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted".

The accused device is illustrated in open and closed circuit positions (R. 341, 342) and in each the heater member is stationary. A switch member in both the Sinko and the Cuno devices is movable but is not a heater member, nor is it intended to get hot.

The District Court in the instant case said:

"Against the background of the prior art his arrangement (Mead's) was not entitled to a broad range of equivalents. And the defendant has used a simplified and improved arrangement dispensing with some of the parts which Mead found necessary." (R. 567).

In other words the Cuno lighter is not the patentable equivalent of the Mead disclosure. Cuno uses a stationary socket with a longitudinally sliding switch member under pressure of an ordinary helical spring. Mead shows a spiral bimetal spring for rotating his socket and plug. None of the parts are interchangeable.

6. A number of factual errors were made in the opinion of the Circuit Court of Appeals for the Second Circuit, as set forth in the petition for corrections (R. 589).

The trial court correctly found (R. 551, F. 1652) that plaintiff-respondent did not manufacture or sell; the Circuit Court of Appeals for the Second Circuit was in error in finding that the plaintiff-respondent manufactured lighters, and that wireless lighters were in great demand and competition had developed before 1927 (Opinion, R. 584 at

585). This is mentioned in part under Section 1 of this argument.

The Court of Appeals for the Second Circuit erroneously found that Mead "did bring to final form a contrivance which had become a standard fixture in motor cars" (Opinion, R. 584 at 587). It is upon this erroneous finding that that court sustained the patent. The record shows unmistakably that the Mead rotary plug and rotary socket device was not a success. There is no evidence of a single sale of such a device since 1929 when the patent issued and no evidence of a successful commercial automatic lighter until 1936 (see sections 1 and 2 of this argument).

7. The Circuit Court of Appeals for the Second Circuit erred in not holding and finding the Mead claims in suit to be invalid for their failure to comply with Section 4888 R. S.

Sec. 4888 R. S. (U. S. C. Title 35 (Sec. 33)) reads in part as follows:

"Before any inventor or discoverer shall receive a patent for his invention or discovery, he shall make application therefor, in writing, to the Commissioner of Patents, and shall file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same; * * * and he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery. * * *

Plaintiff-respondent urged the trial court to regard the handle or knob as the "means for moving said heating member" of claim 2, but that court refused to do so. The

knob is only the means by which the heating member of Mead may be moved. In claim 1 this means was said to be "on the base member" which holds the socket. All claims in suit are defective because vague and incomplete for any novel and useful purpose without the spring and latch mentioned in Section 3 of this argument. Just what are the electrical supply terminals of claims 2 and 11, is also uncertain in scope. The Mead claims in suit should be invalid because vague and indefinite and because they do not particularly point out and distinctly claim the combination sought to be protected as required by law. *Merrill v. Yeo-*
mans 94 U. S. 56; *General Electric Co. v. Wabash* 304 U. S. 364; *Permutit Co. v. Graver Co.* 284 U. S. 52 (58, 60).

Conclusion.

It is respectfully requested that this Petition be granted to harmonize the conflicting opinions as to the validity and infringement of the Mead patent and to correct the several errors specified herein.

Respectfully,

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Attorney for Petitioner.

ROBERT STARR ALLYN,
 HYLAND R. JOHNS,
Of Counsel.

Supreme Court of the United States

OCTOBER TERM 1941

No. 37

THE CUNO ENGINEERING CORPORATION,
Petitioner,

VS.

THE AUTOMATIC DEVICES CORPORATION,
Respondent.

**BRIEF FOR PETITIONER ON WRIT OF CERTIORARI
TO THE UNITED STATES CIRCUIT COURT OF
APPEALS FOR THE SECOND CIRCUIT**

ROBERT STARR ALLYN,

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SUBJECT-MATTER INDEX

	PAGE
Opinions of the Courts Below.....	1
Jurisdiction	2
Statement of Case.....	2
Assignment of Errors.....	6
Summary of Argument.....	7
Argument	9
Morris Patent.....	13
The Mead Patent.....	14
Other Automatic Lighters.....	16
Copeland	17
Copeland Preceded Mead.....	20
Mead's Failure.....	20
Plaintiff's Purchase of Mead's Patent.....	22
Later Developments.....	24
The Cuno Lighter.....	27
The Casco Lighter.....	29
The Record.....	30
Mead Claims Invalid.....	30
Copeland Anticipates Mead's Claims.....	34
Growth of Non-Automatic Lighters.....	37
Attempt to Monopolize Automatic Lighters.....	38
Seventh Circuit Case.....	39
The "Last Step" Not Mead's.....	41
The Decision of the United States Circuit Court of Appeals for the Second Circuit Conflicts With Many Decisions of This Court.....	43
Conclusion	46

TABLE OF AUTHORITIES

	PAGE
Adt v. Bay State Co., 226 F. 925.....	45
Altoona Public Theatres v. American Tri-Ergon Corp., 294 U. S. 477.....	44, 45
Aron v. Manhattan Railway Co., 132 U. S. 84.....	43
Atlantic Works v. Brady, 107 U. S. 192.....	43
Automatic Devices Corp. v. Sinko Tool & Mfg. Co., 112 F. (2d) 335, 42 U. S. Pats. Quart. 261.....	2, 5, 33, 39, 40
Automatic Devices Corp. v. Cuno Engr. Corp., 117 F. (2d) 361 (C. C. A.).....	1, 2, 5, 6, 7, 8, 9, 14, 16, 19, 27, 29, 36, 37, 41, 43
Automatic Devices Corp. v. Cuno Engr. Corp., 34 F. Supp. 146 (D. C.).....	1, 2, 21, 29
Barbed Wire Fence Case, 143 U. S. 275.....	42
Beidler v. U. S., 253 U. S. 447.....	44
Boyd v. Janesville Co., 158 U. S. 260.....	45
Bridge v. Excelsior Co., 105 U. S. 618.....	43
Bundy Mfg. Co. v. Detroit Time-Register Co., 94 F. 524	42
Burr v. Duryee, 68 U. S. 531.....	44
Carlton v. Bokee, 84 U. S. 463, 21 L. E. 517.....	32, 44
Casco Products Corp. v. Sinko Tool & Mfg. Co. (not reported)	24, 38
Clark Thread Co. v. Willimantic, 140 U. S. 481.....	43
County of Fond du Lac v. May, 137 U. S. 395.....	43
Day v. Fair Haven Co., 132 U. S. 98.....	44
Deering v. Winona Harvester Works, 155 U. S. 286.....	43, 45
Diamond Rubber Tire Case, 220 U. S. 428.....	42
Dunbar v. Meyers, 94 U. S. 187.....	43
Frost v. Cohn, 112 F. 1009.....	42

	PAGE
General Electric Co. v. Wabash Corp., 304 U. S. 364.....	44
Grant v. Walter, 148 U. S. 547.....	45
Grinnell Co. v. Johnson Co., 247 U. S. 426.....	43
Hailes v. Van Wormer, 20 Wall. 353.....	43
Howe v. National Co., 134 U. S. 388, 33 L. E. 963.....	32
Kelley v. Coe, 99 F. (2d) 435.....	42
Kennedy v. Trimble, 99 F. (2d) 786.....	45
Keystone Co. v. Phoenix Co., 95 U. S. 274.....	45
LeRoy v. Tatham, 14 Howard 156.....	44
McCarty v. Lehigh Valley R. R., 160 U. S. 110.....	44, 45
McClain v. Ortmyer, 141 U. S. 419, 12 Sup. Ct. 76.....	44, 45
Merrill v. Yeomans, 94 U. S. 568.....	44
Miller v. Eagle, 151 U. S. 186.....	43
Motoshaver, Inc. v. Schick, 112 F. (2d) 701.....	45
National Malleable Castings Co. v. Buckeye, 171 F. 847	42
Office Specialty Co. v. Fenton Co., 174 U. S. 492.....	43, 44
O'Reilly v. Morse, 15 Howard 62.....	44
O'Rourke Engineering Co. v. McMullen, 160 F. 933.....	42
Patent Royalties Corp. v. Land O'Lakes, 89 F. (2d) 624	41
Permutit v. Graver, 284 U. S. 52.....	44
Phillips v. Page, 24 Howard 164.....	44
Potts v. Creager, 155 U. S. 597.....	41
Powers-Kennedy v. Concrete Mixing Co., 282 U. S. 175.....	44
Reekendorfer v. Faber, 92 U. S. 347.....	44
Regar v. Scott, 63 F. (2d) 229.....	41
Revised Statutes (Sec. 4888).....	4, 6, 8, 30, 38

	PAGE
Roberts v. Ryer, 91 U. S. 150.....	43
Royer v. Roth, 132 U. S. 201.....	44
Smith v. Snow, 294 U. S. 1.....	42
Thatcher Co. v. Burtis, 121 U. S. 286.....	43
Thropp's Co. v. Seiberling, 264 U. S. 320.....	45
Unity Co. v. International Corp., 57 F. (2d) 945.....	45
Westinghouse v. Boyden Co., 170 U. S. 537.....	44
White v. Dunbar, 119 U. S. 47, 30 L. E. 303.....	32, 44, 45

INDEX OF EXHIBITS

Plaintiff's Exhibits

		<i>Record Pages</i>	
		<i>Offered</i>	<i>Printed</i>
1	Three drawings of Cuno Automatic Cigar Lighter	15	277
1-A	Drawing of Cuno Automatic Cigar Lighter	15	280
1-B	Drawing of Cuno Automatic Cigar Lighter	15	281
1-C	Drawing of Cuno Automatic Cigar Lighter	15	282
2	Accused cigar lighter manufactured by defendant.....	16	
3	License agreements between Automatic Devices Corporation and Casco Products Corporation.....	16	283
4	Mead patent No. 1,736,544.....	16	289
5	First Cohen patent No. 2,140,311.....	16	296
6	Second Cohen patent No. 2,117,232.....	16	306
7	Transcript of record in case of Automatic Devices Corporation v. Sinko Tool & Mfg. Co.....	20	
8	Sinko Lighter for identification.....	20	
9	Enlarged drawing of Sheet 1 of Mead patent	24	
10	Animated model of Mead device.....	24	
11	Enlarged drawing of Sheet 2 of Mead patent	25	
12	Mead device (with outside spring).....	27	

		<i>Record Pages</i>	
		<i>Offered</i>	<i>Printed</i>
13	Mead device (with inside spring).....	29	
14	Enlargement of Sheet 1 of first Cohen patent No. 2,140,311.....	31	
15	Enlarged drawing of Sheet 2 of first Cohen patent.....	33	
16	Animated model of first Cohen patent	33	
17	Casco Non-automatic Lighter.....	35	
18	Animated model of second Cohen patent No. 2,117,232.....	37	
19	Casco Automatic Cigar Lighter.....	37	
20	Enlarged drawing of second Cohen patent	37	
21	Enlarged drawing of Exhibit 1-A.....	39	
22	Animated model of defendant's device	40	
23	Enlarged drawing of Exhibit 1-B.....	40	
24	Enlarged drawing of Exhibit 1-C.....	42	
25	Enlarged drawing of commercial Casco Automatic Wireless Cigar Lighter	45	
26	Chart of sales.....	81	
27	Ashton patent No. 2,084,966 (Exh. L)	96	
28	Photostatic copy of front page and page 480 of Montgomery Ward Catalog for Spring and Summer of 1929...	192	313
29	Cuno chart—re sales.....	115	315
29-A	Smith British patent No. 285,200.....	176	316

		<i>Record Pages</i>	
		<i>Offered</i>	<i>Printed</i>
30	Exhibit 29 of Sinko case for identification	176	
31	Plaintiff's Exhibit 30 of Sinko case (bill of sale).....	176	322
32	Plaintiff's Exhibit 31 of Sinko case (five sheets made by Mead).....	177	324
33	Plaintiff's Exhibit 32 of Sinko case (instruction sheet).....	177	
34	Plaintiff's Exhibit 34 of Sinko case (list of tools).....	177	332
35	Plaintiff's Exhibit 35 of Sinko case (carton)	177	
36	Plaintiff's Exhibit 36 of Sinko case (Montgomery Ward Catalog)	177	333
37	Carton for Jesco Automatch Lighter	191	
38	Photograph of Exhibit 33 of Sinko case (cigar lighter model).....	198	335
39	List headed "Shipments of Jesco Automatch" as indicated by invoices of S. T. Jessop Company, Incorporated	205	337
40	Diack Lighter for identification.....	210	
41	Enlarged drawing of British Smith patent No. 285,200.....	216	
42	Enlarged drawing of British Rupps patent No. 298,073	216	

Defendant's Exhibits

	<i>Record Pages</i>	
	<i>Offered</i>	<i>Printed</i>
A Casco Lighter for identification.....	59	
B Drawing of Casco commercial lighter....	68	340
C Print of one of the forms of the Mead device	68	341
D Early Cuno lighter.....	72	
E "Saturday Evening Post" advertisement of Casco.....	89	342
F Sample of trade paper advertisements of Casco.....	89	343
G Cigar lighter plug (Ford type).....	93	
H Four sheets, loose-leaf catalog sheets (Casco)	96	344
I File wrapper of Mead patent No. 1,736,544	97	
J File wrapper of Cohen patent No. 2,140,311	97	
K File wrapper of Cohen patent No. 2,117,232	97	
L Copies of prior art patents (portions relied upon).....	98	352-467
493,380 Hammarstrom, Mar. 14, 1893		352
852,326 Harley, Apr. 30, 1907.....		355
1,025,852 Andrews, May 7, 1912.....		358
1,143,572 Denhard, June 15, 1915.....		363
1,294,045 Cavanagh, Feb. 11, 1919.....		368

		<i>Record Pages</i>	
		<i>Offered</i>	<i>Printed</i>
1,318,168	Newsom, Oct. 7, 1919.....		372
1,372,207	Stahl, Mar. 22, 1921.....		379
1,373,583	Adams, Apr. 5, 1921.....		382
1,376,154	Morris, Apr. 26, 1921.....		386
1,437,701	Zecchini, Dec. 5, 1922.....		390
1,540,628	Hurxthal, et al., June 2, 1925.....		396
1,622,334	Metzger, Mar. 29, 1927.....		401
1,697,686	Langos, Jan. 1, 1929.....		405
1,732,784	Wolfson, et al., Oct. 22, 1929.....		409
1,757,255	Mahan, May 6, 1930.....		414
1,838,363	Copeland, Dec. 29, 1931.....		419
1,844,206	Copeland, Feb. 9, 1932.....		425
1,944,925	Cohen, Jan. 30, 1934.....		429
1,980,157	Wolfson, Nov. 6, 1934.....		433
2,060,783	Ashton, Nov. 17, 1936.....		440
2,084,966	Ashton, June 22, 1937.....		449
2,117,703	Cohen, May 17, 1938.....		459
Br. 298,073	Rupps, May 9, 1929.....		467
M	Cutaway sample (Cuno Automatic).....	110	
N	Drawing Cuno Automatic—for identification	127	
O	Sample of Wolfson patent No. 1,980,157	158	

Supreme Court of the United States

OCTOBER TERM 1941

No. 37

THE CUNO ENGINEERING CORPORATION,
Petitioner,

vs.

THE AUTOMATIC DEVICES CORPORATION,
Respondent.

BRIEF ON BEHALF OF PETITIONER ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

Opinions of the Courts Below

The opinion of the United States Circuit Court of Appeals for the Second Circuit holding claims 2, 3 and 11 of the Mead "Cigar Lighter" patent 1,736,544 (R. 289) valid and infringed by the Cuno Lighter, is dated February 3, 1941, reported in 117 F. (2d) 361, and is reproduced at pages 506 to 510 of the Record.

The opinion of the United States District Court for the District of Connecticut holding the claims of the Mead patent 1,736,544 if valid not infringed by the Cuno lighter is reported in 34 Fed. Supp. 146, and is reproduced at pages 483 to 497 of the Record.

The decision of the United States District Court for the District of Connecticut dated September 19, 1939, denying a motion for preliminary injunction on the Mead patent in this case will be found in 34 Fed. Supp. 144.

The opinion of the United States Circuit Court of Appeals for the Seventh Circuit holding the Mead patent 1,736,544 (R. 289) invalid as to claims 2, 3 and 11 and not infringed by the Sinko lighter in the case of *The Automatic Devices Corporation v. Sinko Tool & Manufacturing Company* dated April 27, 1940, is reported in 112 F. (2d) 335. The opinion of the United States District Court for the Northern District of Illinois in the *Sinko* case has been reported, so far as is known, only in 42 U. S. Pats. Quarterly 261.

Jurisdiction

This case is before the Court on a writ of certiorari to the Circuit Court of Appeals for the Second Circuit granted April 14, 1941 (R. 518), and limited to the question of whether claims 2, 3 and 11 of the Mead patent 1,736,544 (R. 289) are valid. The case was assigned for hearing immediately following the case of *The Automatic Devices Corporation v. Sinko Tool & Manufacturing Company* (then numbered 277, now No. 6) on the same question, there being a conflict in the decisions of the Circuit Courts of Appeal. Jurisdiction of this Court is founded on Section 240(a) of the Judicial Code as amended by the Act of February 13, 1925 (28 U. S. C. A. No. 347). The judgment which the defendant-petitioner seeks to have reviewed is dated March 10, 1941 (R. 518).

Statement of Case

This is a suit brought by the respondent, The Automatic Devices Corporation, against petitioner, The Cuno Engineering Corporation, in the United States District Court for the District of Connecticut for alleged infringement of claims 1, 2, 3 and 11 of the Mead patent 1,736,544 (R. 289) dated November 19, 1929, claims 3 and 20 of the Cohen patent 2,140,311 (R. 296) dated December 13, 1938, and claims 1, 2, 10, 16 and 18 of the Cohen patent 2,117,232 (R. 306) dated May 10, 1938.

The District Court, after full trial on the merits, held Mead's claims 1, 2, 3 and 11 of doubtful validity and not infringed by the Cuno lighter.

The claims of both of the Cohen patents were found invalid by the District Court. The Cohen patent 2,140,311 (R. 296) was dropped after the appeal was filed and claim 1 of Mead was dropped without warning at the time of the argument before the Court of Appeals.

The Circuit Court of Appeals for the Second Circuit affirmed the District Court on the Cohen patent 2,117,232 (R. 306) but found claims 2, 3 and 11 of Mead valid and infringed (R. 506).

A petition for corrections of factual errors and for a rehearing as to Mead was denied February 27, 1941 (R. 511), although three of the corrections requested were made.

Petitioner now seeks review of the judgment of the Circuit Court of Appeals so far as it concerns the Mead patent.

Your petitioner, a Connecticut corporation, is a manufacturer of long standing and has been responsible for many improvements in the cigar lighter art, including patents which form the basis for the Cuno and the Casco lighters and including the lighter used extensively by the Ford Motor Company and others.

The respondent does not make or sell anything. It is a mere patent holding company which has licensed Casco Products Corporation under these and many other cigar lighter patents without royalty or other consideration other than an agreement to pay the cost of patent development and litigation.

The Mead patent application was filed August 24, 1927. There is evidence that Mead was experimenting with a cigar lighter in 1927 and possibly in 1926 but no adequate evidence as to what the construction was. The evidence shows that the original construction was not satisfactory. A few improved lighters were placed on the market in

1928 after the patent application was filed, but failed of acceptance. There is no evidence that anyone has ever made or sold more than some 2,000 lighters of the later Mead type, many of which were returned.

Plaintiff-respondent contends for a construction of the Mead patent as a basic patent on a thermostatically protected cigar lighter broadly covering a so-called automatic wireless lighter and that Mead is entitled to credit for a commercial development which did not appear until 1936.

Not until 1936 did Casco Products Corporation (respondent's licensee) put on the market an automatic lighter.

Despite the fact that the Mead patent had then been issued seven years Casco found it necessary to make hundreds of experiments and large expenditures to produce a satisfactory commercial lighter.

The only objects set forth in the Mead patent are to produce "cigar lighters or devices of a similar nature"—which are "extremely simple and cheap in manufacture and more efficient than the devices used heretofore" (R. 291, lines 1-10). Nothing is said in it about wireless or cordless lighters or about signalling or safe driving. The patent contains no disclosure of a device like the Cuno lighter or any other commercially useful device.

It is our contention that Mead disclosed no useful device—that any new idea which may be found in his patent was an obvious one involving no patentable ingenuity—that the claims in suit are vague and inaccurate and do not meet the requirements of Section 4888 of the Revised Statutes. These claims fail to include sufficient elements to carry out any safety feature. The essential latch is missing from the claims. None of the claims are limited to a wireless lighter. All of the claims in suit are substantially anticipated by the prior art.

The so-called automatic safety feature for an electric heater was a "tool of the trade" which was an obvious addition to the lighter of the petitioner's Wolfson patent 1,980,157 (R. 433) filed in 1931 and later embodied in the Casco lighter.

The addition of a thermostatic latch to Morris 1,376,154 (R. 386) was an obvious idea before Mead.

It is our contention that the so-called automatic lighter is a natural development of the art which should be available to everyone.

The automatic lighter was made a success by the development work of Cuno, Casco and Sinko—not by Mead. Mead's device was not immediately adopted and never did drive others from the field. In fact it was a failure.

It is the contention of your petitioner that none of the commercial cigar lighters of the Cuno or Sinko types involve features which should be monopolized by virtue of the Mead patent.

The Mead patent was purchased by Casco Products Corporation May 3, 1934, and later transferred to plaintiff-respondent. Mr. Cohen in the *Sinko* case (R. 70) said that Mr. Johnson, their patent attorney, "discovered that the Mead patent was the one stumbling block"—and they later bought it.

Mr. Cohen claimed to have seen a Mead lighter in 1929 and although he thought it had possibilities "it was passed over rather lightly" (R. 74).

He later developed the Casco lighter after years of experiment and a large investment and in 1938 took out the Cohen patents originally in suit.

Manufacturing and merchandising ability in 1936 and later should not reflect credit on a device which failed in 1928.

The Casco lighter of plaintiff-respondent's licensee bears a notice of eight (8) patents under which it is claimed to be made and sold (physical Ex. 19 offered R. 37).

Mead therefore did not bring cigar lighters to "final form" as found by the Circuit Court of Appeals for the Second Circuit (R. 510).

The opinion of the United States Court of Appeals for the Second Circuit as to the Mead patent is in conflict with the opinion of the Court of Appeals for the Seventh Circuit as to validity and infringement of the same claims

by the Cuno and Sinko lighters which the plaintiff states are "substantially the same" (see respondent's motion for leave to file a petition for rehearing in the *Sinko* case p. 3).

Assignment of Errors

The general errors of the United States Circuit Court of Appeals for the Second Circuit relied upon are:

1. In finding and holding that claims 2, 3 and 11 of the Mead patent 1,736,544 (R. 289) are valid and in not finding and holding that said claims are invalid.

2. In construing the patent on the unsuccessful Mead device to cover the successful construction of defendant-petitioner brought out about ten (10) years after Mead.

3. In failing to find the claims in suit invalid for failure to comply with the requirements of Section 4888, Revised Statutes.

Specific errors of the Circuit Court of Appeals for the Second Circuit relied upon are:

4. In finding in effect that Mead had remedied a defect in wireless lighters (R. 508).

5. In finding in effect that the evidence shows "that for seven intervening years the art had been making futile attempts at improving and refining upon his (Morris') disclosure" when Mead came into the field (R. 508).

6. In finding in effect that Mead led to a modification of the lighter of the Morris patent 1,376,154 (R. 509).

7. In finding that Mead brought the cigar lighter for motor cars to "final form" (R. 510).

8. In finding in effect that conception reduced to practice as shown by Mead is sufficient to sustain claims ap-

plicable to a wide variety of successful devices in contrast to the unsuccessful devices of Mead (R. 510).

9. In finding in effect that there is nothing in the prior art to require the Mead claims to be limited closely to the disclosure (R. 510).

Summary of Argument

1. The Mead lighter as disclosed in his patent was never sold.

2. A few improved Mead type lighters sold in 1928 were so unsuccessful that it was abandoned.

3. There is nothing in the Mead patent to lead one to suppose his device was an aid to safe driving or that it would give a signal when actuated or that it was limited to a wireless type of lighter.

4. Mead's alleged invention did not lead to modification of the Morris lighter as in effect found by the Circuit Court of Appeals for the Second Circuit (R. 509).

5. Mead did not bring the cigar lighter for motor equipment to its final form as held by the Circuit Court of Appeals for the Second Circuit (R. 510).

6. Thermostatic switches were common tools of the electric heater trade before Mead.

7. Copeland 1,844,206 (R. 425) shows the first automatic wireless lighter which anticipates the Mead claims in suit.

8. There could be no patentable novelty in supplying an ordinary thermostatic latch to the lighter of the Morris patent 1,376,154 (R. 386).

9. No successful automatic lighter appeared on the market until the Casco lighter in 1936 and this was radically different from anything disclosed by Mead's patent.

10. The success of automatic wireless lighters was due to the development work done by the Casco, Sinko and Cuno companies none of which ever made and sold a lighter like that of Mead.

11. The only novelty in the Mead patent was a supporting base with a pivoted socket, rotated by a heater plug, held by a latch and rotated backward by a spring.

12. The claims of the Mead patent are vague and incomplete and invalid for failure to comply with the requirements of Section 4888 R. S. which reads as follows:

"Before any inventor or discoverer shall receive a patent for his invention or discovery, he shall make application therefor, in writing, to the Commissioner of Patents, and shall file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same; and in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery. The specification and claim shall be signed by the inventor. No plant patent shall be declared invalid on the ground of noncompliance with this section if the description is made as complete as is reasonably possible."

13. The plaintiff-respondent, owner of the Mead patent, is not a manufacturer and never made cigar lighters as stated by the Circuit Court of Appeals for the Second Circuit (R. 507) and receives no royalty or other consideration from its licensee, Casco Products Corporation, except an agreement to pay for patent development and litigation.

14. It would be contrary to public policy as declared by the decisions of this Court to sustain the claims in suit.

15. We submit that the judgment of the Circuit Court of Appeals for the Second Circuit should be reversed and the judgment of the Circuit Court of Appeals for the Seventh Circuit affirmed.

Argument

An electric lighter for cigars, cigarettes, etc., is only a special kind of electric heater in which a resistance element is heated by the passage of electricity.

The patent in suit relates to improvements in "cigar lighters or devices of a similar nature". The type of cigar lighter here involved is one wherein a plug member carrying a heated electric resistor may be removed bodily from a socket to apply the heated resistor thereon to light a cigar or cigarette. Such removable plug type lighters were concededly old prior to the alleged invention of the patent in suit. They were sometimes called "wireless lighters". They have formed the basis for substantial commercial enterprises long prior to the advent of the devices here charged to infringe. The lighter plugs of these prior art devices were ordinarily carried in sockets. Those sockets contained contacts of an electric circuit designed to be completed by the resistor element of the plug to effect heating thereof. In such prior art devices the electric circuits were completed by manual pressure on the projecting end of the plug, usually against a spring resistance. On release of such pressure the circuit was automatically broken and heating of the resistor ceased.

Several years after the issuance of the patent in suit the manufacturers of these prior art devices, including petitioner here, produced devices wherein the time of application of electric energy to the resistor was automatically determined without required attention by the user. As will be obvious to even a novice in the electrical art,

this was accomplished by the well-known expedient of using a thermostat to break the electric circuit after a predetermined time.

Thermostats have long been used for this specific purpose in the electrical art. It was old to use such thermostats to prevent overheating of electric resistors in electric irons, heating pads, toasters and other electric cooking devices. Such thermostats were used both as a part of the electrical circuits and in the operation of latches controlling the switch mechanism in such circuits. Many circuit controlling thermostats of the prior art included bi-metal strips or coils having the property of abnormal distortion or bending under the influence of temperature changes.

Indeed the prior art foreshadows the utilization of this old and well-known control device, the thermostat, for controlling the electric circuit of a cigar lighter resistor. The prior inventor, Francis C. Copeland, patentee of Patent No. 1,838,363 (R. 419) and No. 1,844,206 (R. 425), provided thermostats for opening the electric circuits of cigar lighter resistors. One of these patents (Patent No. 1,838,363) emphasizes the obviousness of utilizing a well-known thermostat structure by alternatively suggesting the use of a thermostat for timing the circuit connection or the use of manual pressure against spring resistance for holding the circuit closed.

The patent in suit discloses a particular and specific cigar lighter structure which differs materially from petitioner's accused structures. Unlike such accused structures and unlike the similar plug type "wireless" lighters of the prior art which embody fixed sockets into which the plug is inserted, the patentee Mead employs a *rotatable socket* which is turned by the plug and heater member to close the electric circuit. A laterally extending pin projecting from the side of the plug in the Mead structure engages with a spring latch outside the socket to hold the plug and socket in the circuit closing position to which they have been rotated. Heat generated by flow of current

through the resistor is then stated by Mead to effect movement of a thermostatic spring device which causes release of the latch, permitting the plug and socket under influence of a spiral spring to be rotated back to an open circuit position. Thereafter the plug with its lateral latch pin may be withdrawn from the socket and its resistor applied to light a cigar or cigarette.

A principal advantage claimed for the commercial thermostatically controlled devices is that they promote safety in that they require no attention by the operator during the eight to ten second heating period when the plug resistor is connected in the electric circuit. That advantage is admittedly present in petitioner's accused device. This is not mentioned by Mead. Any advantage so attained in the device of the Mead patent is negated in the structure of that patent by the difficulty encountered by users in fitting the laterally projecting pin on the plug into a slot in the socket which is required for rotative purposes. This requires careful physical accuracy of at least the same degree required in fitting a key into a lock and more than offsets any possible advantage gained by obviating the necessity of attention during the short heating period.

In some heaters the resistance is exposed as in cigar lighters, toasters, stoves, etc., and in others it is enclosed as in sad irons, heating pads, coffee heaters, etc.

Harley 852,326 (R. 355) shows a simple form of electric heater for vulcanizing. Current passes through the resistance heating coils 7 to do the required work. The bimetallic thermostatic bar 13 adjacent the resistance coils opens the circuit at 14 at a predetermined temperature. Thus the degree of temperature attainable is automatically limited.

Thermostatic safety switches are of various kinds. Some are heated by adjacent resistors as in Harley 852,326 (R. 355). Others by coils wound around the bimetal such as in Stahl 1,372,207 (R. 379) where coil 19 is wound around

bimetallic latch 13 which holds pin 10 on plunger 8 in closed circuit position against the pressure of helical spring 9.*

Andrews 1,025,852 (R. 358) shows what he calls a "Cut out for Electric Heaters" embodied in a sad iron but in some claims covering an electric heater broadly with a thermostatic switch as in claims 1 and 5.

Plaintiff below has argued that "Andrews thermostat is controlled by the temperature of the body of the iron and not by the temperature of the resistance coil". This it says would not be satisfactory in a cigar lighter. These statements are just enough true to be misleading. The fact is that in both cases it is the temperature created in the vicinity of the thermostat that is effective. The temperature of the resistance coil in the lighter gets up as high as 1200° F., whereas the operating range of the thermostat is only about 300° F. The thermostat is put where it can operate without danger in the time allowed. This happens to be a short time which requires a very sensitive thermostat.

Denhard 1,143,572 (R. 363) shows another "Electric Heater" in the form of a sad iron, but claiming broadly a heating device which has a thermostatic device controlled partly by a switch in the handle as in claim 8.

Newsom 1,318,168 (R. 372) shows a coffee cooker controlled by a thermostatic switch in the base.

In the form of device shown in Fig. 3 of this patent the thermostat is operative under direct influence of the heater to permanently disconnect the electric circuit (R. 377, lines 27 et seq.). In the form of Fig. 4 the heating device is removable.

* In view of the frequent careless use of the term "spiral", we wish to state that we use the term "spiral coil" in its technical sense, to mean a coil, the turns of which lie in a common plane, whereas the term "helical coil" is used to describe a coil in which the turns are of substantially uniform diameter.

Mead's preferred form employs a spiral torsion bimetal spring for rotating his socket. All commercial retracting coils are helical steel compressed springs in the plug, not in or on the socket. Of course, the igniter coils are all spirals.

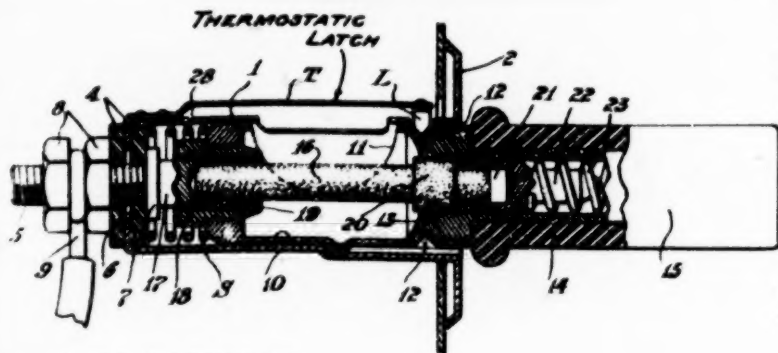
Each device of course has its own electrical and mechanical problems which must be solved before commercial success is achieved.

The earliest attempt at a wireless or cordless cigar lighter appears in the Adams patent 1,373,583 (R. 382). This involves the use of a removable plug with a carbon resistor H carried by a handle P and inserted into a socket B which has circuit terminals for connection to a battery so that when the plug is pushed in the circuit is closed and the carbon heated up. A spring E serves to push the plug out and open the circuit automatically when the handle is released.

Morris Patent

Morris 1,376,154 (R. 386) shows the same sort of device with a socket 1 and spring 28. The plug has a handle 15 and a carbon resistor 16. This patent owned by Casco Products Corp. contained a claim which they contended covered Sinko and Cuno lighters. The inserted sketch shows how simple and obvious a matter it would be to add a thermostatic latch to the Morris socket to hold the plug in the closed circuit position and thus add an automatic feature. This would not involve invention.

MORRIS 1,376,154 MODIFIED



The Zecchini patent 1,437,701 (R. 390) shows another early wireless lighter patent owned by Sinko Tool & Manufacturing Co. The Sinko lighter is a modification of this device.

The use of another thermostatic device is shown in Hurxthal 1,540,628 (R. 396) where the heat at the surface of a piece of toast actuates a thermostatic device 17 to release the bread carrier 6, produce a signal and open the circuit if desired (R. 398, line 18).

Metzger 1,622,334 (R. 401) shows a lighter with the resistor coil open at the front.

There were a number of different cigar lighters on the market from 1927 and 1928 on.

An improved form of the Mead device was on the market for a short time only in 1928, but it was a complete failure as will appear later on.

Cuno, Casco and Sinko have perfected the automatic and non-automatic lighters along lines wholly independently of Mead.

The Mead Patent

The objects of the Mead invention are described merely as to provide a device "extremely simple and cheap in manufacture and more efficient than the devices used heretofore". No other object is stated. Nowhere is it called "safe" or a "wireless" or "cordless" lighter nor are any of the advantages of the wireless type mentioned. The claims are not limited to a wireless lighter.

Two forms are shown. In each form there is a base assembly with a pivoted and rotatable socket and a plug or heater member which is inserted into the socket to rotate it and close the circuit. The base plate has a metallic latch member to which a wire terminal is attached and another wire terminal is attached to the rotatable metallic socket or to the base plate. Current is supplied from any source (but not from the igniter coil of a motor car as erroneously stated by the Court of Appeals, R. 507). The socket is

slotted and the plug has an igniter coil to the inner end of which a transverse contact bar or pin is connected which has to be fitted into the slot when the plug is inserted into the socket and the rim of the coil holder contacts with the socket. By turning or rotating the plug and socket until the contact pin engages the latch the circuit will be closed and the coil energized. A spring is mounted on the base assembly with one end fixed to the base plate and the other end connected to the socket for rotating the socket and plug to the Off or open circuit position. This spring 47 on sheet one of the drawing is of a flat spiral type mounted within the base of the socket immediately adjacent the igniter coil 83. The evidence shows that this was a fatal defect. The only form which Mead's company attempted to sell was changed to place the spring outside of the socket as shown at S in Exhibit C (R. 341). The bimetallic member 54 was supposed to warp when heated and withdraw from engagement with latch 52 so as to permit the spring 47 to rotate the socket and plug against the decreased resistance of the latch and pin 75.

In the form shown on sheet one the spring 47 is described as of bimetal which acts when heated to increase its torsional power sufficiently to overcome the tension of the spring latch 52.

Sheet two of Mead's drawing shows a helical tension spring 105 instead of the spiral spring 47 for rotating or retracting the socket and plug to the off position. In this form there is a bimetallic thermostatic member 54' which presses the spring latch 52 into position to hold the latch against the contact pin 75 when the device is energized. This member 54' is supposed to be heated in some way from the coil 83 but there is no evidence that such a device was ever used. It is doubtful if sufficient heat could be provided at this remote spot to actuate the bimetal quick enough to be of use.

Mead also suggests that the thermostatic element 54 might be heated by passing part or all of the current through it (R. 293, lines 104 et seq.).

The socket 41 has a slot 43 to permit one end of the transverse contact pin to pass freely without engaging the wall of the socket and a slot 44 to receive the protuberance 67 on the plug so that upon turning the inserted plug the socket will rotate but the contact pin 75 will not engage the socket. These slots and the cross pin make it necessary to insert the plug in only one definite rotated position which is obviously undesirable and extremely inconvenient.

Thus we see that although several modifications are shown there is no hint that the device is essentially a wireless lighter or that the invention could be embodied in anything but a rotatable socket and plug device.

There is no mention of any signal device or action such as implied as necessary by the Circuit Court of Appeals (R. 508).

It is obvious from the foregoing that Mead uses the socket and plug idea of Morris and Zecchini. Mead's device isn't suitable for insertion in a hole in the dash or instrument board but it does have the Zecchini igniter coil. The real novel features are the rotatable socket and the spiral bimetal return spring and latch. This was Mead's only contribution, which we will show was an utter failure.

So far as the claims in suit are concerned we understand that the plaintiff-respondent makes no claim of novelty except as to thermostatic control of a so-called wireless lighter.

It is our contention that the claims are not limited to wireless lighters at all and that they do not contain enough elements to cause the devices to function as useful automatic lighters.

Other Automatic Lighters

By some coincidence it appears that in 1926 and 1927 several people began thinking about applying a thermostatic switch for a cigar lighter.

Smith and Sons filed a British provisional specification December 14, 1926, and a complete specification June 2,

1927, on which patent 285,200 issued in 1928 (R. 316). This discloses a wireless cigar lighter with a bimetal thermostatic switch which opens the circuit when the "resistance filament attains a bright red glow".

Another British patent 298,073 (R. 467) was filed in 1928 by one Rupps based upon a German date of October 1, 1927. This, of course, is too late to anticipate but it shows another closely contemporaneous thermostatic cut-out for a cigar lighter.

Copeland

Copeland 1,838,363 (R. 419), filed March 9, 1927, before Mead, shows a cigarette dispensing and lighting device with an igniting coil 27 and a thermostatic switch member 38 (Fig. 10) to open the circuit "when a predetermined temperature is reached" (p. 2, line 90). This is a snap action thermostat which is latched "in" and snaps "out" when hot.

Copeland 1,844,206 (R. 425), filed April 18, 1927, before Mead, shows a lighter for cigars and cigarettes with a thermostatic cut-out or switch. In this structure a socket 11 is secured to the front board of a car and contains a movable and removable igniter coil 14 on an insulating base 15. This is supported on a buckling spring 23 adjacent a thermostatic switch member 24. When the holder 15 is pressed downwardly by a cigar or cigarette, the spring 23 presses against the bimetal member 24 and closes the circuit at 28. The thermostatic member is designed to operate to open the circuit and retract the heater member when the cigar is lighted.

Introducing an element of mystery into the case, plaintiff has contended that Mead has devised a device for opening the circuit when the heating (or igniter) coil reaches a desired temperature. This is cleverly misleading and not correct. Mead's device is merely a safety device or a timing device in the same sense as in other but prior electric heaters. It is the temperature of the thermostatic device itself which determines the opening of the circuit—not the igniter temperature.

Plaintiff's contention that there is some important difference between the thermostatic action of Copeland and that of Mead is not well founded. Mead (p. 3, lines 100-111) plainly says that the thermostatic element 54 may be heated *only* from the coil 53 (which is evidently intended for coil 83) *or* element 54 may be *connected in circuit* so that either the entire or part of the current must traverse the bimetallic element 54 and heat the same coincidentally with the heating of the lighting coil. This is what occurs in Copeland where the current passes through the resistance on the member 24 and also through the lighting coil 14. The thermostatic device of Copeland is no further removed from the lighting coil than member 54 is in Mead. It is a matter of degree. In Mead's patent use of bimetal in the main coil 47 is a "modification". Actually, in the only form of Mead offered in evidence the biasing or rotating spring 47 is the actuating thermostatic element. No one today suggests using bimetal in the retracting spring. No one uses a spiral spring.

Mead intended to include a thermostatic circuit opening device designed to operate when the igniter had had time to get hot enough. This will vary with the ambient conditions and with the energy input just as in Copeland. Copeland's thermostatic device is designed to open the circuit when the igniter has had time to get hot enough to light a cigar. This is a matter of experiment exactly as is the case in the Mead disclosure which gives no instructions as to how this is to be determined. If Mead's disclosure is sufficient, then Copeland's is equally good. Mead's device is nowhere described as a "wireless" lighter. To say that the temperature of the Mead heating member controls the action or that the "circuit is opened as the result of the igniter coil reaching a predetermined temperature, regardless of the time required", is not true.

It is also untrue that "in Copeland the circuit is opened as the result of the lapse of a predetermined time, regardless of the temperature of the igniter coil" as plaintiff has stated heretofore.

It is the rising temperature of the thermostatic device which causes the release action as in the prior art. The igniter coil in practice reaches a working temperature of approximately 1200° F. while the bimetal thermostatic latches only reach a temperature of approximately 300° F. unless the circuit is held closed as it can be in the Mead and Casco devices. In this way the bimetallic spring can be burned out. This is not possible in defendant's device.

Copeland's device is not essentially time controlled. Both Copeland's and Mead's devices are *energy* controlled. Action is subject to the temperature of the air and to the strength of the current supplied which affects the thermostatic device and the igniter coil at the same time.

The Court of Appeals in discussing Copeland 1,844,206 (R. 425) in effect admits that Copeland has all the elements of the Mead claims (R. 509), but held that "it did not lead to the necessary modifications of Morris' lighter". The Court discards Copeland's invention as "still born" but overlooks the fact that Mead's device as shown and described in his patent never even came to light. Even his improved form with the actuating thermostatic spiral coil outside of the socket died in its infancy.

Cohen, with Mead's device and with his many assistants, did not bring forth a Casco thermostatic lighter until 1936.

Plaintiff made much of the fact that Copeland used a separate thermostatic switch 24 instead of relying upon the heat from the igniter coil. There was nothing new in actuating a switch by the heat from a heater coil. That was an old tool of the trade. See Andrews 1,025,852 (R. 358), Denhard 1,143,572 (R. 363), Newsom 1,318,168 (R. 372). The Court of Appeals, moreover, found "that was, however, a difference of detail in design on which Mead's invention cannot rest". It in effect found Copeland to be a wireless lighter with all the elements of the Mead patent. To escape Copeland, however, the Court must have read into or implied the readily detachable plug and the latch and spring—elements which do not appear in Mead's claims

2, 3 and 11, although the latch is found in claims 6, 8, 9, 10 and 13, and the spring or equivalent will be found in claims 6, 8, 9, 10, 12, 13, 14 and 15.

Copeland Preceded Mead

Plaintiff attempted to carry Mead's date back of Copeland's filing on April 18, 1927, but without success. The evidence is not sufficient or of the character required for anticipation of a record date. Mead may have had something before April 18, 1927, but there is no adequate proof of what it was. The only dated drawing or description we find on pages 324 to 331. The date here is August 6, 1927, on page 330, and August 11, 1927, on page 328, evidently placed there by another than the writer of the notes. These notes were made for the patent attorneys and even then "Elmer" was not satisfied with his idea but wanted to "ask the patent attorney if this part (the spring) cannot be covered temporarily until the exact design and gauge of metal is decided upon" (R. 325).

Mead's Failure

It would appear from the testimony as to the Mead invention that the only form which went on the market embodied a latch spring for holding the plug in the rotated closed-circuit position and a flat spiral bimetal spring outside of the socket for rotating the socket back to open circuit position (R. 341). The patent does suggest a helical tension spring on sheet 2 of the drawing outside the socket for rotating the socket but there is no evidence of its use.

It does refer to a latch retracting spring 54 of bimetal. Head testified the latch was made of cold rolled steel.

There is no evidence that anyone else ever used a steel latch or a spiral return spring in a cigar lighter. No one ever used successfully a return spring in or on the socket

member for an automatic lighter. It will be noted that the return spring is in the plug in the Casco, Sinko and Cuno lighters.

Casco did use a spring in the socket in its non-automatic lighter like Cohen patent 1,944,925 (R. 429) but discarded it for the spring in the plug as in the Cuno Corporation's Wolfson patent 1,980,157 (R. 433) and Ashton's Ford type lighter patent 2,060,783 (R. 440).

Plaintiff's witness Mr. Head (R. 185, fol. 234) said **"we had plenty of trouble"** with Mead's device.

"I imagine the heat being so close to the heating element, affected the thermostatic metal" (R. 186).

"And it would not elick off the way it should."

"One thing we had to change our thermostatic spring"—"We took it from the inside, the bottom of the socket and put it on the outside."

The first few shipments to Montgomery Ward were returned—

"They just did not operate just right" (R. 189).

"Occasionally we would have returns" (R. 190).

It was quite a trick to get the proper thermostatic metal (R. 197 and 201).

"The latch was cold rolled steel."

"We tried bimetal up there"—it did not work so well (R. 203, fol. 252).

The Trial Court asked Mr. Head to explain why nothing was done about patenting the Mead device until after the company had sold out to Jessop (R. 200) and Head said:

"Well, I don't know—we had no money to get a patent—I would have **if it had been a success**"

Mr. Mead himself testified (R. 250) that the company went out of business. The testimony of plaintiff's wit-

nesses Dunsmore (R. 252), Johnson (R. 257) and Jessop (R. 268) all prove that Mead's device was just another unsuccessful "gadget".

That Mead himself did not regard his lighter as a success is shown by the testimony of Mr. Cuno as to what Mead told him.

"He stated to me that after considerable experimenting they finally made a sample which was delivered to Mr. Fisher, who at that time was President of the Cadillac Motor Car Company. He had that on his desk for several weeks, hooked up to a battery, and was quite excited about it at first, but after it failed to operate consistently he finally dropped the idea of putting them on as standard equipment on Cadillac cars. Some time after that a jobbing model was brought out, which was some time in 1928, a number of which were sold to the Montgomery Ward Company. And he told me that he was very much disappointed and disgusted by the fact that practically all of them came back after having been used a few times. The setting of the thermostat was evidently too delicate for ordinary operation, due to difference of temperature of atmospheric conditions. In summer-time, why, the temperature got up to a hundred and in the winter-time 22 degrees below zero, and his device did not work satisfactorily under all those conditions. In fact, he told me that he was so badly disappointed in the operation of the lighter that he finally quit his job with the company" (R. 100, fol. 127).

Plaintiff's Purchase of Mead's Patent

Plaintiff-respondent has endeavored to create the impression that Mead was the spark that set fire to Cohen and started the Caseo lighter into existence. We submit that the testimony on that point in the Sinko and Cuno records is quite unconvincing.

Mr. Johnson, president of the plaintiff company and its expert (R. 25), claimed to have seen and discussed a so-called Mead lighter (physical Ex. 12 offered R. 27) with

Mr. Cohen in 1929. This structure is shown in Exhibit C (R. 341). There was a lapse of eight years between the first time he saw it and the second time (R. 26, fol. 38). This Mead device had the spiral bimetallic spring wound around the outside of the socket. None of the Mead devices Johnson saw used bimetallic latches (R. 57, fol. 75).

In arguing for the allowance of a claim in a Cohen patent, Johnson said, as he admitted (R. 66, fol. 86):

"There is no thermostatic element or anything else in Mead for locating the plug in the base member until the igniting unit is heated a predetermined amount."

As this is a necessary feature of an automatic lighter, apparently Mead's patent did not disclose it sufficiently for Mr. Johnson, plaintiff's expert, to find it!

Mr. Cohen, president of Casco Products Corporation (plaintiff's licensee), testified as to the finding in 1929 of a sample of a Mead lighter in his "collection" (R. 74, fol. 95) "in fumbling through and searching" and it was **"discussed casually"**. "I remember clearly having stated that one day that would be the way to do it and it was passed over rather lightly at the time". At that time "we had more business on a lighter known as the '600' than we could actually supply".

This would not look as if there was any need for a lighter of the Mead type at that time.

Mr. Cohen then went on to say (R. 75, fol. 96):

"I did not think a great deal of the lighter as it was, since I knew we were confined to a very limited space, and **it looked like it was an impossibility** to introduce the mechanism, as I thought existed."

Then he could not sleep "along in 1931" until "finally it presented itself as if I could pick it up" (R. 75, fol. 97) and so he got up and "sketched it, and then went back to bed". Just what he found in the morning we do not know.

And so he sent for Mr. Johnson "with the idea of patenting, filing a patent **on what I thought was the greatest thing in the world**, and immediately proceeded to make samples. And **I could easily produce in this court a hundred more various types that we made before we actually made a successful lighter**".

"And so a **prolonged experimentation** was undertaken" (R. 76).

"And we had tried so many types and shapes of thermostats" (R. 76).

Then he turned the matter over to Mr. Johnson (R. 77), who made known the Mead patent which was purchased in 1934 (R. 17, fol. 26), and in 1936 assigned to the plaintiff.

The record shows that Cohen's first application was filed in 1932 and became patent 2,117,703 (R. 459) and a second filed in 1933 became patent 2,117,232 (R. 306) and even that was modified in the Casco 1936 commercial device by changing the latch fingers materially, providing stops between the fingers and adding a retaining device found necessary to prevent the plug from jumping out of the socket (R. 48, fol. 66).

And so it appears that the purchase of Mead's patent in 1934 was an afterthought—Mead was not the impetus to the automatic field.

Later Developments

The Circuit Court of Appeals for the Second Circuit was impressed with the time that intervened between the date of the Morris patent 1,376,154 (R. 386) and the Mead alleged invention and apparently deduced from this that a spark of genius must have appeared. It overlooked the basic character of the claims of the Morris patent and of the Zecchini patent 1,437,701 (R. 390) which undoubtedly retarded independent development of the wireless type of lighter.

Both of these patents were involved in the litigation between Casco Products Corporation and Sinko Tool & Manufacturing Co. in the Northern District of Illinois, Eastern Division (not reported). This same suit also involved the following patents of the Casco Products Corp.:

Hammond	1,620,548
Bain	1,657,189
Cohen	1,710,348
"	1,710,531
"	1,944,923
"	1,944,924
"	1,944,925 (R. 429)
Copeland	1,919,159

It is apparent that almost any cigar lighter, cordless or reel type, can be made automatic by the use of some form of thermostatic switch as in other electric heating devices. That is a feature to be expected as the commercial art progresses. The wireless lighter appears to have been first suggested in 1921. Various improvements followed from time to time. Copeland and Mead made no impression in 1927. Several others, including Casco Products Corporation, Sinko Tool & Manufacturing Company and The Cuno Engineering Corporation, started shortly thereafter. Wolfson (defendant's) patent 1,732,784 (R. 409) filed in 1928 and Cohen 1,944,925 (R. 429) filed in 1929 show early cordless lighters which met with some success. Wolfson 1,980,157 (R. 433) filed in 1931 shows the basis for the Casco automatic and was successful (see chart of sales on R. 315). The only change required to make it automatic was the formation of the contact 10 of bimetal with its tips bent into latches to engage the rim of the heater 9 as in the Casco lighter.

Cohen's first idea was to substitute the thermostatic form of the Hammarstrom patent 493,380 (R. 352) for Cohen's 1,944,925 (R. 429) contact. He afterwards applied the simplest form of bimetal latch to the Wolfson 1,980,157

(R. 433) device then on the market and under which Casco was at one time licensed by Cuno. It took him a long time, however, to get a device that would work satisfactorily and that could be made uniformly and commercially to meet the high standards of modern competition. He got no help from Mead—that is certain. In fact Mead's efforts probably misled the public into believing that an automatic lighter was impracticable.

The existence of the vague, inaccurate and indefinite claims of the Mead patent may have been a factor in delaying the development of a real automatic lighter.

The Ashton 2,060,783 (R. 440) so-called Ford type lighter was made and sold extensively both by Casco and by Cuno in the non-automatic form beginning in 1934, and is still being made and sold. Cuno's automatic is an improved form of this Ashton lighter.

The Casco automatic appeared in 1936. Sinko had previously modified an old Cuno lighter (item 1690) to make it automatic in 1933. None of them received any help from Mead's 1927-1928 failure.

It is obvious that there was no demand for an automatic lighter until it was created by Casco's 1936 lighter and its extensive 1937 advertising.

To credit Mead with any part of this development work, we submit, is to stretch the imagination beyond the elastic limit.

We submit, therefore, that the purpose of the patent law, i. e., to promote the progress of science and the useful arts, would not be carried out if the vague and indefinite claims on Mead's failure are sustained to cover the successful devices of Sinko and Cuno.

The Cuno Lighter

The Court has limited this case to consideration of the question of validity of claims 2, 3 and 11 of Mead although the Court of Appeals in the Seventh Circuit case held the claims not only invalid but not infringed. In the instant case the Court of Appeals for the Second Circuit has treated the Mead invention as broad and has not given us the advantage of a discussion of the form or substance of the claims.

It is difficult to draw a clear line of distinction between validity and infringement unless we are willing to coldly examine the actual invention and the claims in suit. We may find some sort of invention expressed in some claims and no invention in others. The fact that a patent may contain a novel idea does not justify a monopoly of all ways of realizing that idea. The patent can be valid only so far as the claims express a novel and complete device capable of utilizing that idea.

We will, of course, omit any comparison of the Cuno lighter with the claims.

In view of the fact, however, that we have felt it necessary to charge that the Mead device has never appeared on the market since 1928, we feel that we should give a brief description of the Cuno lighter in order that the Court may not get the impression as the Court of Appeals apparently did that the Cuno lighter is somehow similar to the disclosure of the Mead patent.

The Cuno lighter is shown on Exhibits A, 1-A, 1-B, 1-C (R. 277-282) and resembles somewhat the Ashton patent 2,060,783 (R. 440). It will be easier to understand from the drawings on pages 280 and 282 where there are reference numbers. The socket 10 is grounded and has lugs 17 which serve as stationary contacts. The bimetal fingers 16 are connected to bolt 12 and conductor 13 and constitute movable contacts.

The plug has an insulating body sleeve 18 into which the ring 23 is screwed. This ring has a wall 24 to which the stem 25 of the igniter unit is fixed. The igniter unit has a resistance coil 27 mounted in a cup 28 which is secured to the stem 25 and forms one plug contact. A metal sleeve 19 slides within the ring 25 and has a flange 35 which serves as the other plug contact. A stud 21 on which the knob 22 is mounted is secured to a disc 20 which forms the outer end of the sleeve 19. A spring 34 is interposed between disc 20 and wall 24 so as to normally press the knob 22 outwardly. When the plug is inserted into the socket the igniter contact rim 28 engages the lugs 17, 17 and the spring detent 36 in the socket wall engages in the groove 37 of the sleeve 18 to hold the plug in place.

To close the circuit the knob is pushed inwardly until the contact rim 35 engages the bent ends of the bimetal fingers 16, 16. Of course the igniter cup does not move and never touches the bimetal latch fingers. Heat is radiated from the igniter coil and eventually warps the latch fingers outwardly so as to release the contact sleeve of the plug and permit the spring 34 to retract the contact sleeve and thus open the circuit without moving or disturbing the igniter or heater member.

It will be noted that the plug can be inserted in any rotated position as there is no projecting pin as in the Mead patent.

The propelling spring is entirely in the plug where it is not likely to be damaged by heat from the igniter as in Mead's device. It is impossible to hold the contact rim 35 against the fingers 16 when they are warped by heat, hence the coil cannot be burned out as is possible in the Mead device. There is no rotary socket to get jammed and out of order. In fact the Cuno socket is entirely immovable. There is no bracket or base assembly with laterally disposed wire terminals as in Mead's patent.

The bimetal fingers 16, 16 act directly as contact latches and perform no other function whereas in the Mead device

the spiral rotating spring in one form is of bimetal and in another form supplements a bimetal latch holder 54 to control a separate latch.

The Casco Lighter

From the tenor of the decision by the Court of Appeals it appears almost inescapable that the Court had given Mead the credit for the commercial success of the Casco lighter.

This Casco lighter however is radically different from anything shown, described or claimed in the Mead patent. A drawing will be found on Defendant's Exhibit B (R. 340).

It will be recalled that Mr. Cohen testified to the large number of experiments all of which we presume were made after the inspiration of his dream.

The Casco lighter is similar to the Cohen patent 2,117,232 (R. 306) but shows a number of changes in construction which must have intervened between the date of filing of Patent 2,117,232 and the commercial lighter of 1936. Neither of them however shows a rotatable socket or a spiral bimetal throwing spring. In both cases the retracting spring is in the plug as in Defendant's Wolfson patent 1,980,157 (R. 433). The Cohen-Casco lighters show plugs with igniter coils which do move back and forth in making and breaking the circuits. In the Cuno and Sinko lighters however the igniter coils do not move in breaking the circuit. The circuit is broken by retraction of a sliding switch contact member.

This Cohen patent 2,117,232 was one of those urged against the Cuno lighter which was supposed to infringe it. The District and Appeals Courts however found the Cohen claims invalid. Doubtless the Cohen lighter is a great improvement over Mead but the Cohen claims were found not to cover the Cuno lighter. Mr. Johnson testified that the Casco lighter contained "many refinements and minor structural changes" (R. 37), "minor details which are

troublesome from an engineering point of view" (R. 45). All of which tends to show that there was no invention in the automatic idea, but there were real mechanical and electrical difficulties in developing a useful automatic lighter not solved by Mead.

The Record

In view of the fact that this Court is concerned only with the Mead patent, we might have condensed the record. We feared, however, that the Court would not get a correct view of the situation if reference to the two Cohen patents was deleted, since it was Cohen and his staff who were responsible for the step by step development of the first successful automatic lighters after the Wolfson 1,980,157 (R. 433) type was placed on the market but—we submit—wholly independently of Mead.

We do not overlook the invention of the Sinko auto-lighter in 1933, but this did not appear on the market until after the Casco lighter.

The various patents issued from 1931 on show that gradual improvements and refinements brought about by the intense competition of the age and the desire for "something different". This competition would be greatly retarded by sustaining claims like those of Mead in suit.

Mead Claims Invalid

It is our contention that the claims in suit lack invention and are invalid: 1st, failing to comply with Section 4888, Revised Statutes; 2nd, being broader than any disclosed invention; 3rd, for lacking inventive novelty; 4th, the claims are invalid because merely functional; 5th, the combination claimed produced no new result.

Claim 2 requires "means for moving said heating member". Nowhere does the patent describe such an element nor is there any such element. Plaintiff has contended that

this is the knob—but Judge Hincks correctly denied this. The knob is not “means for moving the plug” but merely means by means of which *it may be moved*. One is active—the other passive. If we refer to claim 1 which contains the same element we find that it is described as “on said base member” which must refer therefore to the socket with the slot 44 to be engaged by the protuberance 67 which serves “to drive and rotate the socket when the knob is turned” (R. 293, lines 10, 11).

The last phrase of claim 2 “means responsive to the temperature of said heating unit for interrupting said energizing circuit” is broader than the invention, incorrect and distinguishes from the art only by function.

This claim 2 does not include a latch or a spring, both of which are required by an automatic lighter. A mere ordinary warping switch member like that of Harley 852,326 (R. 355) would interrupt the circuit—and keep opening and closing the circuit as the bimetal heated and cooled.

Furthermore, it is not the temperature of the heating unit that actuates the circuit breaker—it is only such heat as is created by the passage of current through the bimetal and by radiation and convection from the heater coil. The latch and the spiral throwing spring never reach anything like the temperature of the heater coil. This is pertinent because of the plaintiff's argument that Copeland 1,844,206 (R. 425) has its thermostat 24 too far away from the igniter coil to be affected by its temperature. This claim is not even limited to a cigar lighter.

The current supply terminals are not clearly defined in the patent—presumably the term refers to terminals 58 and 59, but they do not constitute any combinable feature with the other elements.

This claim 2 requires the heating member to be “removable”, but so is any cord type lighter plug—so is that of Copeland. The Court should not read into the claim any of the peculiarities of a wireless or cordless lighter to save the claim. That would be contrary to the law and public policy.

White v. Dunbar, 119 U. S. 47, 30 L. E. 303.

Carlton v. Bokce, 84 U. S. 463, 21 L. E. 517.

Howe v. National Co., 134 U. S. 388.

Claim 3 differs somewhat from claim 2, but it has similar defects and is therefore invalid. It is not limited to a wireless lighter. Every cord type lighter has a removable heating member—and so does Copeland although not for the same purpose.

So far as this claim is concerned it is even broader and more indefinite than claim 2 as it calls for a mere "support" for the heating member rather than a socket. The current supply terminals on the support must be elements 58 and 59 which perform only the usual function of current supply—not related in any way to the other elements of the claim. The method of support of the heating member is described in a purely functional manner.

Here again there is no latch or spring required. There is merely "means responsive to the temperature of said heating unit for controlling the heating thereof". This means is the same as in claim 2, but is further faulty in that it calls for "controlling the heating". A switch which merely opens a heater circuit cannot be said to control the heating. This term "control" implies at least that it can increase or decrease, whereas Mead's switch can only open the circuit. As pointed out with respect to claim 2, it is not the "temperature" of the heating unit, but the heat transmitted through the air or by passage of current through the thermostat itself. This claim is too broad and indefinite to be valid.

Claim 11 is also invalid for the same general reasons as claims 2 and 3. Furthermore, this claim does not even require that the heater member be removable—only movable—which defines Copeland's igniter exactly. This claim calls for a base member, but omits the essential socket. Here again the "electrical supply terminals" are on the base member with no patentable relation to the other elements. The heater member is functionally located as movable between an energized position and an off position. This claim adds "automatic means for withdraw-

ing said heater member from the on position to the off position *upon* heating of said heater". This phrase is similar to one in claim 12 which Mr. Johnson, the president of the plaintiff company and its expert, said in the *Sinko* case (*Sinko* R. 49) was incorrect or inaccurate because the heater member is not withdrawn—it stays where it was when heated—it merely rotates. Furthermore, this claim reads exactly upon Copeland.

It will be noted that there is no relation between the heater and the "automatic means". It acts "*upon* heating of said heater"—which means at the time of or when the heater is heated which is exactly what Copeland does whether you consider that it is the heat from the heater or from a coil on the bimetal bar itself which opens the circuit.

This claim is much broader than the invention because it is not even limited to a thermostatic device.

Plaintiff has taken the position that the Mead invention opened the circuit and kept it open and that it indicated when the circuit was open. No such requirement will be found in claims 2, 3 or 11.

The District Court in the *Sinko* case held:

"The essential features of the device, as it appears to me, were the combination of the spring and the thermostatic device in a cigar lighter and this combination I think revealed invention" (*Sinko* R. 241).

However, claims 2 and 3 do not require springs and claim 11 does not require a thermostatic device and none of them requires a latch which is essential for an automatic wireless lighter.

We submit, therefore, that the claims in suit are invalid for the reasons given. They are essentially met by Copeland's patent 1,844,206 (R. 425) and involve no invention over Morris and Zecchini in view of the common use of thermostatic switches in connection with electrical heaters. The device as claimed would produce no unexpected result.

The claims of Mead are literally anticipated word for word by the construction shown in Fig. 2 of Copeland 1,844,206 (R. 425) if given any broad scope.

Copeland Anticipates Mead's Claims

CLAIM 2 OF MEAD (R. 294)

In a device of the class described,
a removable heating member

having an electrical heating unit,
a socket for receiving and holding
said heating member,

electrical current supply terminals,

means for moving said heating member to a position for establishing an energizing circuit to said heating unit, (no means for moving is described in the Mead patent but only a handle whereby the heating member is moved and a guide for directing the rotary movement of the heating member)

and means responsive to the temperature of said heating unit for interrupting said energizing circuit.

NOTE: Mead's spiral throwing spring was so close to the igniter coil as to be unsatisfactory.

FIG. 2 OF COPELAND 1,844,206 (R. 425)

A cigar lighter

heating member 15, and tubular extension 16 (the degree of removability is not set forth in the claim)

resistance heater 14

the socket is formed by the guide member 11 and the extension 16

the terminals are connected to the control wires 26, 27, 29 and 30

the cigar when pressed against the member 15 causes the heater to be moved about its pivot 22 causing the spring 23 to be flexed in an opposite direction and about the center of the bimetallic arm or thermostatic bar 24 causing the switch 28 to be closed and the heater 14 to get hot by its being connected with the battery 25

the bimetal arm or thermostat 24 is heated to a large extent by the wire wrapped around it and both it and the heater 14 are simultaneously heated by the same current, since they are in series with the battery. They therefore both become heated simultaneously so that the bimetallic arm flexes away from the contact 28 to open the circuit in response to or as the heater 14 gets hot. The bimetal arm 24 flexes to return the buckling spring 23 to the position illustrated in Fig. 2 and at the same time opens the circuit through the switch 28.

CLAIM 3 OF MEAD

a lighting device for cigars and the like,

removable heating member

ring an electric heater,

support for receiving and holding said heating member,

current supply terminals on said support,

said heating member being movable on said support to a position where said heating unit is energized from said terminals

and means responsive to the temperature of said heating unit for controlling the heating thereof. (said does not control the heating of the heater 24 by keeping it at any predetermined temperature but is only effective to stop heating it after it has attained a desired temperature.)

FIG. 2 OF COPELAND

An electric lighter for cigars and cigarettes, (lines 1 and 2 of page 1 of the patent R. 490)

a heating member 15 with the tubular extension 16 removable from the guide tube 11 by means of the bayonet joint or pin and slot connection 17

coil 14

the lower end of the tubular extension 16 constitutes a support for receiving and holding the heating member 15

the wires illustrated lead to terminals on said support

this occurs when the buckling spring 23 is bowed downwardly from the position illustrated in Fig. 2 so as to close the circuit through the switch 28

since the main heater 14 and the auxiliary heater wound around the bimetal arm 24 are both connected to the same source of current and are in series, as one heats up the other does likewise so that the bimetal arm bends to open the circuit in response to or as the heater 14 gets hot. When the bimetal arm 24 flexes enough it opens the circuit at the contact 28 and thus cuts off further heating.

CLAIM 11 OF MEAD

In an electric lighter of the class described, a base member,

a heater member movably mounted on said base member,

an electric heater on said heater member,

electrical supply terminals on said base member,

said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted,

and automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater.

FIG. 2 OF COPELAND

Either the tubular extension 10 or the guide 11 constitutes a base member

the heater member 15 is pivotally mounted at 22

an electric heater 14 on the heater member or refractory base 15

the terminals for the wires illustrated are electric supply terminals on the base member

the heater members 14 and 15 are pivotally movable from the position illustrated in Fig. 2 to a position closer to the bimetal arm 21 in which the spring 23 is bowed oppositely, the arm 24 is pressed downward by the spring and the circuit is closed at the contacts

as previously described when the bimetal strip 24 gets hot enough it flexes upwardly to open the circuit at the contact 28, snap the spring 23 back to the position illustrated and this movement of the spring also causes the heater member 14 and 15 to be swung upwardly to their position shown in Fig. 2 in which the circuit is broken.

Inasmuch as the claims of Mead are literally anticipated by Copeland 1,844,206 (R. 425), it should not be necessary to consider the changes over Copeland as did the Circuit Court of Appeals for the Second Circuit because these differences over Copeland are only found by improperly implying limitations into the Mead claims.

The Court of Appeals for the Second Circuit, in upholding the patent, made no examination of the separate claims in suit, but treated the patent as though they were for an automatic wireless or cordless lighter with the elements it considered necessary for a cordless lighter, i. e., a socket, a removable cordless plug with a heater coil, movable to close the circuit, a latch for holding the plug in closed circuit position, a thermostatic device responsive to heat created by the heater coil for retracting the latch and means for breaking the circuit and indicating the completed action to the user.

No such device was claimed by Mead or granted by the Government.

If there had been any such claim in the patent, the public would have been warned. The claims are supposed to define the limits or boundary of the patented domain. The public is entitled to know where the fence is in order that it may not in ignorance trespass upon a Government grant. An invisible or elastic fence is no fence at all.

Growth of Non-Automatic Lighters

The Court of Appeals made the peculiar remark, with respect to Zecchini, Metzger and Langos, "None of these differed basically from Morris, and they show that during the seven intervening years the art had been making rather futile attempts at improving and refining upon his disclosure" (from 1922 to 1929). And it is upon such reasoning that the Court of Appeals sustained plaintiff's case. Even if these efforts were futile, that has no bearing on the questions herein. Actually, the record (physical Ex. 26, offered R. 81) shows the growth of non-automatic lighters by Cuno and Casco from 1,157,000 in 1934 to 1,964,000 in 1935 and 2,066,000 in 1936. Total sales of all lighters were 2,375,000 in 1937 but fell to 1,379,000 in 1938. Of course, the Sinko lighter was in the market at the same time. Certainly Mead made

no contribution to this business. Mead made no "new and fruitful combination". His combination was a complete failure. He did not bring to "final form a contrivance which had become a standard fixture in motor cars". We doubt if after these thirteen years of failure a single lighter of the Mead form could be found in use.

The fact that it took nearly eight years after Mead's improved device was on the market and hundreds of experiments or samples before Casco, with its enormous facilities, could put a successful lighter on the market certainly does not establish immediate adoption of anything that Mead contributed. The suits of Automatic Devices Corporation against Cuno and against Sinko and the suits by Casco Products Corporation against Sinko Tool & Mfg. Co., involving twelve patents on cigar lighters, where all the patents were held invalid or not infringed or dropped, show the extent to which this plaintiff and its licensee have gone to control and stifle the development of the art. We submit that no such vague patent on a useless device should be now upheld to block the path of progress.

The fact that there is a conflict between the two courts of appeals on the question of validity and infringement is strongly indicative that the claims in suit are not so clear and distinct as to comply with Section 4888. It would not appear that the public should be expected to know the scope of a patent when two such courts reach diametrically opposite views on the same claims and as to structures which the plaintiff holds are "substantially similar".

Attempt to Monopolize Automatic Lighters

This is an attempt to monopolize an automatic feature in cigar lighters by means of a vague patent which makes no suggestion of safety, discloses a device which was never sold in the form shown and which in an improved form

was a failure. The patent is indeed a paper patent held by a corporation which does not manufacture or sell anything and which receives no royalty or other consideration for the use of the Mead and many other patents except an agreement to pay the cost of patent litigation and development. We submit that it would be contrary to public policy to sustain such claims as these.

Seventh Circuit Case

The decision of the Circuit Court of Appeals for the Seventh Circuit involves a record which in some respects is similar to the record in the instant case. Of course, the defendants' structures in the two cases are somewhat different, although plaintiff-respondent has contended that they are substantially alike.

In the Seventh Circuit case the Court found the Mead claims invalid and not infringed. That Court had before it a number of references not in the instant Cuno case.

In the Sinko case no especial stress was laid upon the Morris patent, which shows a type of cigar lighter involving a fixed socket and a removable plug as hereinbefore discussed.

In the Seventh Circuit case, as in this case, the plaintiff endeavored to show completion of the Mead invention prior to the filing of the Copeland patents, but without success.

In the present case, there is considerably more testimony showing the difficulty which Mead had in attempting to produce a workable device. There is also the testimony here of plaintiff's witness Head to the specific effect that the Mead device was not a success (R. 200).

It is therefore noteworthy that the Circuit Court of Appeals for the Seventh Circuit held invalidity of the claims in suit and lack of infringement upon a record in some respects more favorable to the Mead patent than the record in the instant case.

In that case Mr. Cohen, president of the Casco Products Corp. (licensee under Mead), testified that Mead was a "stumbling block" (Sinko R. 70).

The Court of Appeals for the Seventh Circuit held with respect to the Sinko lighter (Sinko R. 511):

"It is obvious that there is nothing found in defendant's device which is not found in Zerchini, and in Copeland No. 1,844,206, and we think the same may be said with respect to Mead. Plaintiff, however, contends that Copeland's device is not an automatic wireless cigar lighter. With this we cannot agree. Of course, all cigar lighters have wires whether they be automatic or what is termed wireless, that is to say they have those wires which conduct electricity. We suppose, however, that a wireless cigar lighter is commonly understood to mean one in which all connection of the plug to the device is severed when the plug is withdrawn from the socket. But even so, we think **Copeland is an automatic wireless cigar lighter.** It is not only wireless in the popular sense, but it is plugless. It provides for the insertion of a cigar in the socket instead of a plug, and the cigar is lighted before it is withdrawn from the socket. The cigar is inserted in a tubular guide and thrust inwardly until the circuit is connected, at which time the end of the cigar rests upon the heating unit, which heating unit remains in the socket. The connection is held until the heating unit becomes incandescent, and the cigar is lighted, at which time the heat from the heating unit operates the thermostat to release the cigar and its guide from the heating unit and they return to their normal position.

Before the Mead disclosure wireless cigar lighters were old, wherein the heating unit was on the end of the plug and the plug was removed for the purpose of lighting the cigar. All that Mead did was to cause the thermostat to operate on the plug in effect the same as Copeland permitted it to operate on the cigar. We do not feel justified in holding that this amounted to invention, in view of the fact that wireless plugs without the thermostat had been used so long, and in view of the further fact that the same principle of thermostatically disconnecting the circuit had been used in the

manufacture and use of electric irons, and the like. We think the fields are quite analogous, and since all of Mead's elements were quite old in both fields and he made no use of any new principle, we think his disclosures amounted to nothing more than mechanical skill, and we think the claims herein relied upon are invalid."

Of course the Cuno lighter follows generally the Morris type of device with the contact latch in the socket but the action is the same as in the Sinko lighter which follows Zecchini in having the switch contacts inside of the plug.

Each employs a simple form of thermostatic latch and neither uses a rotating socket or a bimetallic spiral throwing spring.

The "Last Step" Not Mead's

Plaintiff-respondent contends for validity and infringement based upon the idea that Mead made the last step which led to commercial adoption and success and has heretofore cited cases where the Court has sustained doubtful claims. In fact, the Circuit Court of Appeals in this case has cited cases supposedly justifying a finding of validity here. We submit, however, that in every such case cited there has been a wholly different state of facts.

We will first mention the cases cited by the Court of Appeals.

Potts v. Creager, 155 U. S. 597. In that case the patented machine had been a success and the defendant's machine was substantially like it. The closest reference was held to have been an abandoned experiment. Other reference were in non-analogous arts. No such situation exists here.

Regar v. Scott, 63 F. (2d) 229. This case was dismissed for non-infringement and does not appear to be authority for sustaining the Mead patent.

Patent Royalties Corp. v. Land O'Lakes, 89 F. (2d) 624. There the Court found "that the patent had quick and

almost universal acceptance" and that "the patent was a long advance; it gave the trade a new protection it had sought for many years". Such is not the case here.

Kelley v. Coe, 99 F. (2d) 435. Here the Court found that Kelley succeeded where all others failed. Kelley had received a medal from the Franklin Institute and was recognized as a benefactor. But even here there was a dissenting opinion.

Cases like *Frost v. Cohn*, 112 F. 1009, are not pertinent because in that case there was a narrow claim specifically copied by the defendant and shown in that form to be of great value.

The same is true in *O'Rourke Engineering Co. v. McMullen*, 160 F. 933. The claim was specific,—the invention of great value.

Similarly in *Bundy Mfg. Co. v. Detroit Time Register Co.*, 94 F. 524, the invention had marked a decided step and proven of great value. Here Mead made no useful contribution.

Other cases involving the resolving of doubt in favor of the "last step" lack pertinence here because in each the Court found either immediate adoption and public recognition or close copying of specific claims or both. No such facts are present here.

In the *Diamond Rubber Tire* case, 220 U. S. 428, there was a very specific claim which had been slavishly copied.

The *Barbed Wire Fence* patent, 143 U. S. 275, presented a narrow claim and almost universal adoption of the specific construction.

In the *Incubator* case of *Smith v. Snow*, 294 U. S. 1, the method involved was shown to be of very great utility and essentially copied.

The decision of Mr. Justice Lurton in *National Malleable Castings Co. v. Buckeye*, 171 Fed. 847, is also believed to be pertinent.

In the instant case Mead tried and failed. Commercial success eight years later was achieved only by radically different devices.

The Decision of the United States Circuit Court of Appeals for the Second Circuit Conflicts With Many Decisions of This Court

We have been unable to find a single decision of this Court which seemed to us to sustain plaintiff's contention and the decision of the Circuit Court of Appeals for the Second Circuit.

We submit that to sustain claims such as herein involved would not promote the progress of science and the useful arts as provided in the Constitution but would encourage an unlawful monopoly.

The following cases appear to your Petitioner as stating the law applicable to the facts shown herein.

A patent on an imperfect, unsuccessful device should not block progress.

Deering v. Winona Harvester Works, 155 U. S. 286.

Atlantic Works v. Brady, 107 U. S. 192.

Clark Thread Co. v. Willimantic, 140 U. S. 481.

On old device applied to a new use is not patentable.

Dunbar v. Meyers, 94 U. S. 187.

Bridge v. Excelsior Co., 105 U. S. 618.

Atlantic Works v. Brady, 107 U. S. 192.

Aron v. Manhattan Railway Co., 132 U. S. 84.

County of Fond du Lac v. May, 137 U. S. 395.

Miller v. Eagle, 151 U. S. 186.

Roberts v. Ryer, 91 U. S. 150.

Mere aggregations of well known elements resulting only in the expected results are not patentable.

Hailes v. Van Wormer, 20 Wall. 353.

Office Specialty Co. v. Fenton Co., 174 U. S. 492.

Grinnell Co. v. Johnson Co., 247 U. S. 426.

Thatcher Co. v. Burtis, 121 U. S. 286.

Royer v. Roth, 132 U. S. 201.

Reckendorfer v. Faber, 92 U. S. 347.

McCarty v. Lehigh Valley R. R., 160 U. S. 110.

Powers-Kennedy v. Concrete Mixing Co., 282 U. S. 175.

Claims which differ from the prior art only in functional statements are invalid.

Burr v. Duryee, 68 U. S. 531.

Westinghouse v. Boyden Co., 170 U. S. 537.

LeRoy v. Tatham, 14 Howard 156.

O'Reilly v. Morse, 15 Howard 62.

The law and public policy demand that the inventor clearly state what he claims.

White v. Dunbar, 119 U. S. 47.

Altoona Public Theatres v. American Tri-Ergon Corp., 294 U. S. 477.

Merrill v. Yeomans, 94 U. S. 568.

Beidler v. United States, 253 U. S. 447.

Carlton v. Bokee, 84 U. S. 463.

McClain v. Ortmyer, 141 U. S. 419.

Office Specialty Co. v. Fenton, 174 U. S. 492.

General Electric Co. v. Wabash Corp., 304 U. S. 364.

Claims should not be sustained by implying essential elements which are not actually required by their terms.

McCarty v. Lehigh Valley R. R., 160 U. S. 110.

Carlton v. Bokee, 84 U. S. 463.

White v. Dunbar, 119 U. S. 47.

Altoona Public Theatres v. American Tri-Ergon Corp., 294 U. S. 477.

Permutit v. Graver, 284 U. S. 52.

Phillips v. Page, 24 Howard 164.

Day v. Fair Haven Co., 132 U. S. 98.

Elements which are found in one claim should not be read into or implied into another claim to save it from anticipation. This specific point is not found in the decisions of this Court although we feel that it is covered broadly in the doctrine clearly stated in *White v. Dunbar*, 119 U. S. 47, and the following cases:

McCarty v. Lehigh Valley R. R., 160 U. S. 110.

Altoona Public Theatres v. American Tri-Ergon Corp., 294 U. S. 477.

Keystone Co. v. Phoenix Co., 95 U. S. 274.

Circuit Courts of Appeal have expressed disapproval of the special case as above stated in

Motoshaver, Inc. v. Schick, 112 F. (2d) 701 (C. C. A. 9).

Kennedy v. Trimble, 99 F. (2d) 786 (C. C. A. 2).

Success only is not a proper criterion of patentability.

McClain v. Ortmyer, 141 U. S. 419.

Thropp's Co. v. Seiberling, 264 U. S. 320.

Altoona Public Theatres v. American Tri-Ergon Corp., 294 U. S. 477.

Grant v. Walter, 148 U. S. 547.

Commercial success of one form of device should not be credited to a radically different disclosure.

Deering v. Winona, 155 U. S. 286.

Unity Co. v. International Corp., 57 F. (2d) 945 (C. C. A. 7).

Adt v. Bay State Co., 226 F. 925 (C. C. A. 1).

Acceptance of licenses under a number of patents is not conclusive as to patentability of one of them.

Thropp's Co. v. Seiberling, 264 U. S. 320.

A detail improvement patent is not entitled to a broad interpretation.

Boyd v. Janesville Co., 158 U. S. 260.

Conclusion

We submit therefore that the judgment of the United States Circuit Court of Appeals for the Second Circuit should be reversed.

Respectfully submitted,

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Supreme Court of the United States

OCTOBER TERM 1941

No. 37

THE CUNO ENGINEERING CORPORATION,
Petitioner,

vs.

THE AUTOMATIC DEVICES CORPORATION,
Respondent.

REPLY BRIEF ON BEHALF OF DEFENDANT-PETITIONER ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

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SUBJECT-MATTER INDEX

	PAGE
Exhibit 17 Not a Morris Lighter.....	2
No Signal in Mead's Patent.....	2
Non-equivalents	3
Development of Mead Required.....	3
Heat and Time.....	3
Cohen Not Inspired by Mead.....	4
Mead's Claims Recast.....	5
Prior Art Misconstrued.....	6
Thermostatic Control an Old Tool.....	6
A Serious Mead Defect.....	7
Mead's Failure.....	7
Best Art Not Cited by Patent Office.....	7
Mead's Thermostatic Device.....	8
Cuno's Lighter Similar to Sinko's.....	9
The Sinko Lighter and the Prior Art.....	9
Mead's Combination Neither Useful Nor Properly Claimed	10
Morris Patent Not Before the Court in the Sinko Case	11
Mead Not Responsible for Improving Cigar Lighters..	11
Requirements of a Successful Cigar Lighter.....	11
Evidence of Alleged Invention.....	12
Casco's Advertising.....	13
A New Test of Patentability.....	14
Conclusion	15

TABLE OF AUTHORITIES CITED

	PAGE
Altoona Publix Theatres, Inc. v. American-Tri-Ergon Corp., 294 U. S. 477.....	10
Bundy Mfg. Co. v. Detroit Time-Register Co., 94 Fed. 524	3
Constitution of U. S. A., Article 1, Section 8.....	14
Incandescent Lamp Patent case, 159 U. S. 465.....	15
Section 4886, Revised Statutes.....	8
Section 4888, Revised Statutes.....	10, 15
Section 4893, Revised Statutes.....	8, 14
Weber v. Freeman, 256 U. S. 668, 65 L. E. 1162.....	3

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Plaintiff-respondent in its brief contradicts very few of our statements and arguments; but—

1. It now seems to rely upon a claim of broad novelty of concept instead of its former narrower interpretation.
2. It denies the necessity of any especial originality but implies that Mead's device was so to speak the detonator which started the Casco campaign.
3. It then disclaims any great success of the Mead device as such.
4. It insists upon misconstruing the functioning of the prior art devices.
5. It admits the need of extensive experiments to produce a commercial device.

6. It asserts that Mead's was a wireless lighter but fails to offer proof.

7. It makes little effort to clarify the claims of the patent.

8. It now proposes to reverse the opinions of the past ninety years and sustain claims upon novelty and utility alone.

We propose to comment on the brief generally in order of pages.

Exhibit 17 Not a Morris Lighter

Plaintiff-respondent on page 3 refers to the 1928 Casco lighter as the "Morris wireless lighter which car manufacturers soon began to adopt as standard equipment on their cars (R. 73, 74)."

The fact is that Exhibit 17 (offered R. 35) referred to on R. 73 and 74 was not a Morris lighter but a Casco lighter which used a wire resistor. So far as we know the Morris carbon heater device was never made by Casco.

No Signal in Mead's Patent

Plaintiff-respondent (pp. 4, 8) lays great stress upon the idea of a "click" or some other signal in the Mead device although there is not a word on the subject in the patent. Copeland 1,844,206 (R. 426) discloses a signal lamp 31. Figs. 1 and 2.

Hurxthal 1,540,628 (R. 398) refers to both an audible and visual signal for his toaster.

Cohen 2,117,703 (R. 465) claims quite broadly a lighter of the early Casco type with an audible signal. See claims 9 to 14.

Non-equivalents

On page 5 plaintiff-respondent refers to rotary and longitudinal motions as equivalent and notes *Bundy v. Detroit*, 94 Fed. R. 524. We might refer to *Weber v. Freeman*, 256 U. S. 668, 65 L. E. 1162, where this Court held to the contrary. Neither case, however, controls here. Actually it is the rotary socket, latch and spiral thermostatic spring return which are the distinguishing features of the Mead device. The plug was broadly old. Plaintiff's and defendant's lighters are not equivalents.

Development of Mead Required

It is most interesting to note that respondent's present brief (p. 5) admits that modern demands "required much development" of Mead and that (p. 11) "the case depends on what is disclosed and claimed in the Mead patent and not upon the little or great success of those early commercial embodiments". How much less can it depend upon the later successes of Casco, Cuno and Sinko?

Cohen's development occurred before the purchase of Mead, not after, as implied on page 6.

Heat and Time

Respondent attempts to create the impression that a thermostat in Copeland's patent 1,844,206 (R. 425) acts after a predetermined time whereas Mead's device is responsive to heat. This is most misleading. In each case heat distorts the bimetal latch after a predetermined time. The parts are so designed that the release takes place when desired.

Respondent (p. 8) states as to Mead that the circuit is open "As soon as the igniter coil 83 is brought to the desired temperature". Claim 11 of Mead in fact says that the "heater member" is withdrawn "from the ON position

to the OFF position *upon* heating of said heater". This is definitely a time factor.

Mr. Johnson, plaintiff-respondent's president and expert, admitted that the temperature of the igniter or heater coil and the thermostatic device of Copeland 1,844,206 (R. 425) both rise at the same time (R. 224), of course at different rates as is the case in the Mead device.

There is no evidence that it takes any more or less time for an automatic lighter to get "ready" than for a non-automatic. Actually it is nearer 8 or 10 seconds than 15, as stated in respondent's brief on page 16. Mr. Cohen in the Sinko case (R. 83) testified to a time limit of 8 to 10 seconds.

Cohen Not Inspired by Mead

Respondent (pp. 11, 31) stresses Mr. Cohen's claim to having been inspired by Mead, but this is offset we submit by the portions of Mr. Cohen's testimony which we have quoted on pages 23 and 24 of our brief.

Furthermore, we call attention to a claim (R. 62) sworn to by Mr. Cohen in the application for his patent 2,117,703 (R. 459) filed July 23, 1932, reading as follows:

"In an Electric Cigar Lighter, the combination of a base member, a removable plug supported by said base member, an igniting element on said plug, and a thermostatic catch for locking the plug in the base member until the igniting element is heated a predetermined extent."

Mr. Johnson had previously testified that he had seen a Mead device probably in 1929 and yet the above claim was later made by Mr. Cohen.

A stipulation appearing on R. 471-473 includes a quotation from the original application for Mr. Cohen's patent 2,140,311 which we submit conclusively proves that he did not know of the Mead device when that application was filed.

Substantially identical language is found in Mr. Cohen's patent 2,117,703 (R. 461) beginning on page 1 of that patent, line 4, and extending to line 19 in the second column. This was filed July 23, 1932. It does not seem possible that Mr. Cohen could have made any such contention as to his invention in 1932 if prior thereto he had been inspired by the Mead device or by the Mead patent.

Mead's patent was bought by Casco Products Corp. May 3, 1934 (R. 18).

Mead's Claims Recast

On page 13 respondent attempts to recast Mead's claims of novelty, "i. e., the combination of the plug, resistance coil and socket elements with a thermostat responsive to the temperature of the heating element or glow member." Unfortunately this would not constitute a useful lighter—nor is it what Mead claimed.

Plaintiff-respondent disclaims any intention to interpret Mead's claims broadly and states that they left open to the public all other ways of opening the circuit to the igniter. In view of respondent's contention that the claims cover structures so radically different from that disclosed by Mead such as the Cuno, Sinko and Casco lighters, it is difficult to see how one could make a simple and satisfactory automatic lighter of a type suitable for insertion into a socket in a dash which would not come within the broad scope claimed by the respondent. Sinko has simply modified the prior Zecchini patent 1,437,701 (R. 390) structure. Casco has modified the Wolfson lighter 1,980,157 (R. 433) which was certainly developed in 1931 without the aid of Mead. And Cuno has developed the Ashton Ford type lighter 2,060,783 (R. 440). As respondent construes them, the claims would cover the mere addition of a thermostatic latch to the Morris device 1,376,154 (R. 386).

Prior Art Misconstrued

Respondent on page 20 incorrectly states that "In every prior device having a thermostatic control, either the operation of the thermostat was placed under the control of some other thing, such as the sole plate of an electric iron, or of an auxiliary resistance whose only function was to operate the thermostat after the lapse of a predetermined time, or upon abnormally heavy surges of current".

In Harley 852,326 (R. 355) the thermostatic cutout 8 is actuated by the heat from the resistance coil 7.

In Andrews 1,025,852 (R. 358) the thermostatic device 15 is actuated by the heat from the coil (Fig. 4).

The same action occurs in Denhard 1,143,572 (R. 363), see claim 8, R. 367. Obviously it is the heat from the coil that actuates the thermostatic release of the switch. Of course it isn't the temperature of the coil that actuates any of these devices, but the heat given off. In no case does the thermostatic device reach a temperature anywhere near that of the active heating coil. Mead proposed a spiral bimetal spring so close to the heater coil as to make it impracticable.

Thermostatic Control an Old Tool

Plaintiff-respondent on page 20 of its brief admits that "thermostatic controls * * * were known 'tools' in the electrical and other arts * * * and no one may rightfully patent their use for any particular purpose". It contends, however, that Mead has utilized this tool in a new combination.

Mead did not introduce a "new mode of operation" as claimed by respondent except to insert a plug into a rotatable socket and rotate it by turning the plug. The entire plug has two positions in the socket. All that Cuno and Sinko do is to push a switch contact into closed circuit position like in any push button switch. There it is

held by a thermostatic latch similar to the latch 13 in Stahl 1,372,207 (R. 379). This does not constitute a new mode of operation or produce a new result.

A Serious Mead Defect

In the Mead lighter, the plug can be held by hand in the closed circuit position and burned out, but this is not possible with the Cuno lighter where if the knob and sliding contact are held *in* the bimetal fingers will open and close as in the Harley hunting thermostatic device of patent 852,326 (R. 355) without doing any harm.

Mead's Failure

On page 24 of its brief respondent contends that it did not occur to others that by "picking out a suitable thermostat and then making certain modifications and changing the principle of operation, the wireless cigar lighter could be so altered that the improved lighter when offered to the public would make practically obsolete all other lighters".

We submit that Mead did not pick out "a suitable thermostat" nor did he make such changes or change the principle of operation so as to supplant other lighters. Mead's lighter was never a success. He made no progress.

Best Art Not Cited by Patent Office

On pages 23 and 24 respondent refers to certain prior art.

The only references cited by the Patent Office against the Mead application (R. 472) were Metzger 1,622,334 (R. 401) and Harley 852,326 (R. 355). Had the Mead patent received the careful attention it should have had in the Patent Office and had the facts here presented been known to the Patent Office Examiner, we submit that the claims

in suit would never have been granted under Section 4893 of the Revised Statutes or Section 4886 of the Revised Statutes.

Mead's Thermostatic Device

Respondent on pages 29 and 30 has misconstrued our criticism of the Mead device on page 18 of our brief. In Mead it takes time for the igniter coil to get hot and the thermostatic device gets to its lower actuating temperature by reason of the heat transferred to it from the igniter coil and the heat produced by the passage of current through the bimetal (if it is in circuit). In Copeland 1,844,206 (R. 425) and in Mead it is the energy of the electric current passing through the device which actuates the thermostatic device to open the circuit at the pre-designed time. In both cases it takes time and that time will vary with the characteristics of the device and the ambient atmospheric conditions.

Respondent questions our contention that Mead discloses the idea that the latch might be entirely heated by the current flowing through it and yet Mr. Johnson in the Sinko case (R. 51) admits just that. In other words, Mead contends that he does not need to use the igniter as the heating means. And Johnson admits (Sinko R. 52) that with such a structure the "break" would not depend directly upon the temperature of the heating coil. If this is so then Mead must have regarded heat from the igniter coil and heat created by the resistance to current passing through the latch as equivalents. As respondent now contends to the contrary, the public cannot be blamed for being misled as to the possible scope of the claims in issue.

Cuno's Lighter Similar to Sinko's

Respondent contends that the Sinko and Cuno lighters are substantially the same (p. 33 of its Brief). So far as the claims in suit are concerned this is probably true, although we understand that in the Sinko case the defendant contends that its device which was found not to infringe the Mead claims is structurally different from the Cuno lighter. However, as the Sinko device is free the Cuno lighter should also be free.

The Sinko Lighter and the Prior Art

In the Sinko lighter referred to by respondent on page 3 of its brief, the thermostatic latch member is located within the plug (not in the socket) so that the release is effected by heat produced by the current which passes through the latch and through the heater coil. Heat from the heater coil is transmitted by conduction through the adjacent parts of the plug. This is precisely the way heat is transmitted to actuate the release of the latch in the Andrews Automatic Cut-out for Electric Heater in patent 1,025,852 (R. 359) and in Denhard's Electric Heater 1,143,752 (R. 363) and Newsom's Coffee Cooker 1,318,168 (R. 372) to open the circuit when the parts have reached a predetermined temperature.

As we read the decision of the Circuit Court of Appeals for the Second Circuit, it found that broad patentable invention was involved in merely applying such an arrangement to a cigar lighter even though it was done in an impracticable manner.

Mead's Combination Neither Useful Nor Properly Claimed

On pages 34 et seq. respondent urges validity and infringement of claims 2, 3 and 11, and in seeking a broad construction is obliged to overlook the requirement of the claims that the heating member is moved when closing the circuit. While this is true in the Mead device since the entire plug with the igniter unit is rotated to close the circuit, no such construction or operation can be found in the Cuno or Sinko devices. In both of these devices the igniter or heating unit stands still all the time while the plug is in the socket.

This shows to what extremes the respondent is forced to sustain the validity of the claims and at the same time urge infringement.

We submit that the movement of a switching member as in the Cuno and Sinko lighters while the heater element is stationary is not the equivalent of the moving of the entire plug and heater as in the Mead patent. The attempt by the respondent to so twist the language of the claims as to cover the defendant's lighters, we submit, demonstrates that the claims are not so clear and distinct as to comply with the requirement of Section 4888 of the Revised Statutes.

The Court of Appeals held "it is the conception that counts, the act of imagination which assembles the elements into the new and fruitful combination" (R. 509).

With this conclusion we might agree if the combination were new and fruitful and disclosed and claimed as required by law. However, as stated recently by this Court in *Altoona Public Theatres, Inc. v. American Tri-Ergon Corp.*, 294 U. S. 477, the combination "is one which was neither claimed nor granted" in the Mead patent and cannot properly be called "fruitful".

Morris Patent Not Before the Court in the Sinko Case

The Circuit Court of Appeals (R. 509) referred to the Seventh Circuit case and to the Morris patent 1,376,154 (offered R. 98, printed R. 386) as if the Court in Chicago had found that Mead had made only a minor improvement over Morris. The fact is that the Morris patent to which we have been referring was not in evidence in the Sinko case. How the Court could have been so misled we do not know.

Mead Not Responsible for Improving Cigar Lighters

On pages 38 and 39, respondent seems to claim credit is due Mead for improving wireless lighters in 1927 or 1928. The fact is that wireless lighters appear to have first come into general use about 1927 or 1928 about the same time that Copeland and Mead were working on the subject. We have no figures as to sales, however, in the record until 1931 when the Wolfson lighter 1,980,157 known as the Cuno model 2600 came on the market (R. 315). This was improved and became popular in 1934 as the Ford type lighter (Cuno model 1700). Plaintiff's Exhibit 26 (offered R. 81) tabulates the Cuno and Casco sales from 1934 to 1938.

We submit that Casco's commercial automatic lighter was a simple development of the Cuno device of this Wolfson patent 1,980,157 (R. 433) under which Casco was licensed by Cuno (R. 116).

Requirements of a Successful Cigar Lighter

To be successful, as shown in the Cuno, Sinko and Casco lighters:

- 1) The socket must be stationary.
- 2) There must be one or more abutment contacts in the bottom of the socket to take up the thrust of the plug when inserted.

- (3) The plug must be cylindrical and without lateral projections so that it can be inserted into the socket in any rotated position (no keyhole "fishing").
- (4) The plug must have an end contact around the igniter coil at its inner end to engage the abutment contact in the socket.
- (5) There must be another contact within the socket to be engaged by a part of the plug.
- (6) The retracting spring must be in the plug as far from the hot igniter coil as possible so that it will not be annealed.

Every one of these features is present in the Cuno, Sinko and Caseo lighters. Not a single one of them is found in the Mead patent.

For an automatic lighter there should be added a bimetal latch separate and distinct from the retracting spring to engage and hold a relatively movable part of the plug when it is thrust straight into the socket.

This element is present in all the successful automatic lighters but will not be found in Mead's device which uses the spiral bimetal return spring.

Evidence of Alleged Invention

Respondent on page 38 refers to seven years between Morris and Mead. This does not indicate invention by Mead because Mead was not appreciated or adopted. The fact is that when the industry wanted improved lighters it devised suitable adaptations of the non-automatic lighters available and in doing so disregarded the impracticable teachings of Mead.

Respondent overestimates the importance of thermostatic control. It is a convenience but has not supplanted non-automatic devices. When the non-automatic had been perfected, it was a simple matter to add a thermostatic latch but not in the manner proposed by Mead.

Efforts by others to improve features of cigar lighters cannot be regarded as evidence to sustain the validity of the Mead claims.

Respondent on page 41 refers to the changes required to make Mead's combination. This might be true as it did require material changes to make the useless Mead device but it required extremely simple changes in the current lighters to make the Wolfson, Zecchini and Ashton lighters automatic.

On page 42, respondent states that a return to the non-automatic would be a retrogression. It is submitted, however, that a return to anything like the Mead structure is impossible to conceive. In the Mead device, we submit that the keyhole "fishing" action required to replace the plug would more than offset any saving in time required to hold a plug in the closed circuit position. At any rate, Mead did not claim or mention any safe driving feature.

Casco's Advertising

On page 42, plaintiff-respondent implies that commercial success of Casco was not due to advertising, "Hence there is no such showing of such 'prodding'." This overlooks Mr. Cohen's testimony as to a national advertising campaign (R. 81). Mr. Cohen tried to create the impression that the advertising did not "draw" but the answer was they sold the Casco lighter.

We call the Court's attention to the samples of advertising, Defendant's Exhibit E (offered R. 89, printed R. 342) and Defendant's Exhibit F (R. 343). Exhibit E (R. 342) shows the advertisement in the Saturday Evening Post of April 10, 1937, Casco lighter. Exhibit F (R. 343) refers to Casco National Advertising—"Over 83 million advertisements . . . full pages in color and dominant copy . . . will be carried by the leading National magazines shown in this ad." On this page is shown the title headings of The American Weekly, Collier's, Life and The Saturday Evening Post—all of which have extremely wide circulation.

A New Test of Patentability!

Plaintiff-respondent on pages 43-45 makes a most astonishing contention as to the proper basis of a patent, i.e., "The degree of ingenuity, we submit, is not the test. Rather, the test is—is the invention new?"

We know of no recognized American case which supports this theory. If respondent is correct, any novelty however slight is sufficient to support a patent. Even if this were the statute law, there is still the requirement of a valid claim directed to the novelty and utility. Under the law the invention must also be useful and we have conclusively shown, we submit, that Mead's device as claimed was not useful. Furthermore, Congress has no power to grant monopolies except under Article 1, Section 8, to promote the progress of science and the useful arts, and no patent can be valid under the Constitution unless it fulfills this requirement.

Respondent also overlooked Section 4893 * of the Revised Statutes which limits the grant of patents to inventions which are "sufficiently useful and important". We submit that the Commissioner of Patents overstepped his authority in granting the claims in suit.

Plaintiff-respondent makes no attempt to prove that the Mead patent is valuable. That it has been damaged is scarcely sustained by the record which shows that the Casco Products Corporation pays no royalty or consideration for its use other than an agreement to pay for development and litigation. It would appear to be trying to build up a patent monopoly.

There are therefore in this case none of the factors which sometimes tend to turn the scales of doubt toward the plaintiff's case.

* Sec. 4893 R. S. On the filing of any such application and the payment of the fees required by law the Commissioner of Patents shall cause an examination to be made of the alleged new invention or discovery; and if on such examination it shall appear that the claimant is justly entitled to a patent under the law, and that the same is sufficiently useful and important, the commissioner shall issue a patent therefor.

Conclusion

We submit that to grant a monopoly for the manufacture, use and sale of automatic cigar lighters based on the Mead disclosure would be contrary to the law and the intent of the Constitution.

An enormous amount if not most of the litigation on patent rights is due to inadequate disclosure and the issue of vague and indefinite claims—the scope of which is not clear.

Under the American patent system, the inventor must describe his invention

“in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same; and in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions” (R. S. 4888).

Not only must he thus describe his invention so that the public can produce it without experimentation (*Incan-
descent Lamp Patent Case*, 159 U. S. 465), but

“he shall particularly point out and distinctly claim the part, improvement or combination which he claims as his invention or discovery” (R. S. 4888).

Respondent's brief treats the Mead patent as if it were for an automatic wireless lighter although nowhere does the patent speak of the alleged safety feature of a wireless lighter nor are the claims in issue restricted to a wireless lighter.

The public is entitled to know without any doubt not only what the real invention is—but what the inventor *claimed* and what the Government granted, not what he could or should have claimed. Not what he was entitled

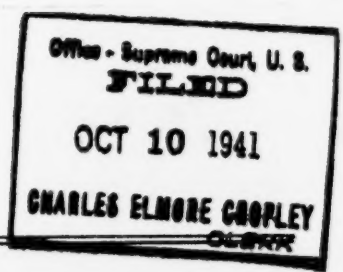
to but what he claimed and was granted. The law provides a specific remedy when an inventor fails to properly claim his invention. Our laws do not provide for judicial reconstruction of faulty claims. Those who are too lazy or too ignorant to draw proper claims would like to be able as they are in Great Britain to claim "what I have shown and described"—and then let the poor public make its own search of the art and guess what some Court may be persuaded by clever counsel to believe it to be.

We submit that the claims in suit are invalid and that this suit should be dismissed.

Respectfully submitted,

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FILE COPY



Supreme Court of the United States

October Term 1941. No. 37

THE CUNO ENGINEERING CORPORATION,
Petitioner,

vs.

THE AUTOMATIC DEVICES CORPORATION,
Respondent.

**BRIEF FOR RESPONDENT ON WRIT OF CERTIORARI
TO THE UNITED STATES CIRCUIT COURT OF
APPEALS FOR THE SECOND CIRCUIT.**

DRURY W. COOPER,
HENRY M. HUXLEY,
THOMAS J. BYRNE,
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SUBJECT-MATTER INDEX.

	PAGE
Opinions of the Courts Below.....	1
Jurisdiction.....	2
Summary of Argument.....	2
Argument.....	3
The Invention of the Patent in Suit.....	3
The Patent in Suit.....	7
Mead's Commercial Device.....	9
The Mead Claims in Issue.....	12
Novelty.....	15
The Cigar Lighter Art Prior to Mead.....	15
Morris No. 1,376,154.....	17
Zecchini No. 1,437,701.....	17
Metzger No. 1,622,234.....	18
The Thermostatic Control Art Prior to Mead.....	19
Mead's Combination Is Not Suggested by the Prior Art.....	19
Smith British Patent No. 285,200 of 1928.....	21
Rupps British Patent No. 298,073 of 1929.....	21
The Missing Link.....	23
Copeland Did Not Have the Mead Invention.....	24
Copeland No. 1,838,363.....	25
Copeland No. 1,844,206.....	25

	PAGE
Commercial Use of Mead's Invention.....	31
The Casco Automatic Wireless Cigar Lighter..	31
The Accused Cuno Automatic Wireless Cigar Lighter	32
The Sinko Automatic Wireless Cigar Lighter	33
Mead's Claims are Valid as to Form and Substance	34
Evidence Demonstrates that Mead's Invention Was Not Obvious	38
(a) Evidenced by Lapse of Time.....	38
(b) Evidenced by Apparent Non-Utility.....	39
(c) Evidenced by Petitioner's Misdirected Efforts at Improvement.....	40
(d) Evidenced by Misdirected Efforts of Others	41
(e) Evidenced by Changes Required in Exist- ing Things to Make Mead's Combination..	41
(f) Evidenced by the Fact that to Return to the Non-Automatic Lighter would be a Retrogression	42
(g) Evidenced by Commercial Success.....	42
The Law as to Patentability.....	43
The Decisions of the Courts of Appeals.....	45
Conclusion	49

TABLE OF AUTHORITIES.

	PAGE
Automatic Devices Corporation v. Cuno Engineering Corporation, 117 Fed. (2nd) 361	1, 14, 19, 33, 38, 46
Automatic Devices Corporation v. Cuno Engineering Corporation, 34 F. Supp. 146	1
Automatic Devices Corporation v. Sinko Tool & Manufacturing Co., 42 U. S. P. Q. 261	2
Automatic Devices Corporation v. Sinko Tool & Manufacturing Co., 112 Fed. (2d) 335	2, 45
Barbed Wire case, 143 U. S. 275, 36 L. Ed. 158	39
Bundy Manufacturing Co. v. Detroit Time-Register Co., 94 Fed. R. 524	5
Concrete Co. v. Gomery, 269 U. S. 184	22
Constitution (Article I, Sec. 8, Clause 8)	43
Cuno Engineering Corporation v. Meehl, et al., 113 Fed. (2d) 862-863	40
Diamond Rubber Company of New York v. Consolidated Rubber Tire Co., 220 U. S. 428	47
George Frost Co., et al. v. Cohn, et al., 112 Fed. 1009	39
Hotchkiss v. Greenwood, 11 How. 248	44
O'Rourke Engineering Co. v. McMullin, 160 Fed. 933	42
Potts v. Creager, 155 U. S. 597	48
Revised Statutes, §4886 (35 USCA §31)	43
Revised Statutes, §4923 (35 USCA §72)	21

Supreme Court of the United States

THE CUNO ENGINEERING CORPORATION,
Petitioner,

vs.

THE AUTOMATIC DEVICES CORPORATION,
Respondent.

October Term 1941
No. 37

BRIEF FOR RESPONDENT ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT.

The Petition for Certiorari was allowed only on the issue of validity of the patent in suit, and the same is true in No. 6, *The Automatic Devices Corp. v. Sinko Tool & Mfg. Co.*, from the Seventh Circuit.

Opinions of the Courts Below.

The opinion of the Court of Appeals for the Second Circuit, holding claims 2, 3 and 11 of the Mead patent in suit valid and infringed, is reported in 117 Fed. (2d) 361, and appears at pages 506-510 of the Record.*

The opinion of the District Court, holding claims 2, 3 and 11 of the Mead patent not infringed, is reported in 34 F. Supp. 146, and appears at pages 483-497 of the Record.

The opinion of the United States Court for the Northern District of Illinois in the case of Automatic Devices Corporation v. Sinko Tool & Manufacturing Company, now Case

* Since the original folio numbers and the printed record numbers differ, it should be noted that reference in this Brief is made to the printed record.

No. 6 in this Court, holds claims 2, 3 and 11 of the Mead patent valid and infringed by the Sinko cigar lighter, is reported in 42 U. S. P. Q. 261, and appears at pages 239-241 of the Record in Case No. 6.

The opinion of the United States Circuit Court of Appeals for the Seventh Circuit, holding claims 2, 3 and 11 of the Mead patent invalid and not infringed, is reported in 112 Fed. (2d) 335 and appears at pages 502-517 of the Record in Case No. 6.

Jurisdiction.

This case is before this Court on Writ of Certiorari to the United States Circuit Court of Appeals for the Second Circuit, granted by this Court on April 14, 1941 (R. 518).

Summary of Argument.

1. The claimed Mead invention is for an automatic wireless cigar lighter such as now extensively used in automobiles.
2. Mead was the first in the art to produce an automatic wireless cigar lighter. His invention is new and useful.
3. Mead's claimed combination was neither known nor suggested by the prior art.
4. The Copeland patents do not disclose the Mead invention.
5. The extensive use of the Mead invention in commercial cigar lighters demonstrates its utility and importance in the art.
6. The decision of the Court of Appeals in this case, holding that claims 2, 3 and 11 of the Mead patent are valid as they read, should be affirmed, and the decision of the

Court of Appeals for the Seventh Circuit in Case No. 6, holding these Mead claims invalid, should be overruled.

7. Petitioner's arguments, as stated in its brief, are based on false premises, many of which are misleadingly stated and unsupported by the record, and none substantiates petitioner's argument that claims 2, 3 and 11 of the Mead patent are invalid.

ARGUMENT.

The Invention of the Patent in Suit.

The Mead patent (R. 289-295), which relates to improvements in wireless electric cigar lighters of the type now extensively used on automobiles, discloses the first *automatic* wireless cigar lighter.

A *wireless* cigar lighter is one in which an electrical glow member or igniter coil carried by a *removable* plug or igniting unit is brought to incandescence while mounted on a holding device socket by turning or pushing the plug so as to close a circuit leading to the igniter coil, after which the plug with the coil is bodily taken by hand from the holder in which it normally rests and the hot coil applied to the cigar or pipe or cigarette as one would a hot coal or match; the heat stored in the coil, coupled with suction applied to the pipe, etc., by the smoker, igniting it. The plug has no wires or other means connecting it with the holder when removed for use, hence the name "wireless" or "cordless". Thus far the device was old at Mead's date, and is shown, for example, in the Morris patent No. 1,376,154 (R. 386).

In 1928 Casco Products Corporation (later respondent's licensee) introduced the Morris wireless lighter, which car manufacturers soon began to adopt as standard equipment on their cars (R. 73-74).

In all wireless lighters prior to Mead, the operator closed the energizing circuit by manually operating the igniter plug against the tension of a spring normally holding the circuit open. This was done, for example, either by pushing in the plug, as in Morris (R. 386), or by moving a button on the plug as in Zecchini (R. 390), or by rotating the plug as in Metzger (R. 401). To keep the circuit closed, the operator had to hold the plug by hand for an interval of a quarter of a minute or so until, depending upon experience or guesswork, he thought the coil heated enough for use, whereupon he pulled out the plug and applied it to his pipe, etc.

Mead made the wireless cigar lighter *automatic*—first, by making it unnecessary to keep the hand on the plug while the coil is heating up, second by automatically opening the circuit (and keeping it open) immediately upon the igniter coil reaching the predetermined temperature for use, and, third, by indicating that the device is ready for use by the return of the manually operated part to normal position and the resulting sound produced thereby (R. 127).

In accomplishing these results, he made the automatic means for opening the circuit and throwing back the plug *responsive to the temperature of the igniter coil*; that is, by his means, the heat of the igniter is predetermined, and that, in turn, delivers the lighter, so to speak, ready for use.

The practical advantages of these improvements are that they permit the driver of an automobile to use both hands for driving purposes, except for the split second required to initiate the heating operation (pushing in or turning the knob of the plug) and subsequently to remove the plug and coil for use when it has "clicked" off. They insure that the igniter coil is just the right temperature for use, neither too hot nor too cold, and thus eliminate guesswork attendant upon the use of the manually controlled lighter. And they avoid burning out of the igniter coil (R. 91).

Mead illustrated rotary motion of the plug to close and open the circuit (like Metzger) instead of longitudinal motion of the plug (Morris), or of a part of it (Zecchini). These were clear equivalents.

Bundy Mfg. Co. v. Detroit Time-Register Co., 94 F. R., 524—C. C. A., Sixth Circuit; in which a turning movement in a time recorder was held equivalent of a longitudinal one.

Mead's device, as illustrated in the drawing of the patent, was comparatively large and cumbersome, being designed to be clamped on the instrument board and not adapted for through-the-board mounting as required for *standard equipment* on cars. That later developed to be the principal market (R. 79-80). Car manufacturers desired a lighter on the car when sold. Mead, as illustrated, would take up more room upon the instrument board than automobile manufacturers were able to assign for it (R. 75). All this required much development, and patents on the improvements and adaptations were secured by respondent—known as the Cohen and Johnson patents—but all of them were held invalid by the District Court and the Court of Appeals, both in this case and in the companion case at bar; this for the reason that Mead's invention exhausted the field and the later patents did not advance it materially.

Within his field, Mead was a primary improver, since for the first time in the art he obtained a wireless cigar lighter with automatic operation.

Soon after Mead's automatic lighter came upon the market, it came to the notice of Cohen, then and now the President of Casco, respondent's licensee. The evidence shows (R. 74-75) that he recognized its merits and resolved to incorporate the Mead invention, with its automatic opera-

tion, in cigar lighters of the "push-in" type, which by that time were enjoying substantial acceptance by the public and by car manufacturers (R. 74).

In due course, rights under the Mead patent were acquired and experiments were carried on to incorporate the Mead invention in a cigar lighter of the push-in (as distinguished from rotary) type which would meet the car manufacturers' requirements in regard to small size, to fit the small hole they assigned it in the instrument panel, and which at the same time would be susceptible of large production at a low price and faultless in operation (R. 76).

This being done, the resulting Casco automatic cigar lighter was put on the market (R. 78). One after another of the car manufacturers adopted it as its standard equipment (R. 78), and in a few years this automatic cigar lighter practically displaced the non-automatic type, as shown by the chart, Plaintiff's Exhibit 26 (offered R. 81), which shows that by 1938 out of a total of 1,159,253 wireless cigar lighters sold by Casco Corporation, 977,393, or about eighty-four per cent, were of the automatic type in spite of the fact that the wholesale prices to car manufacturers were from ten to fifteen cents per lighter higher for the automatic than for the non-automatic lighters (R. 78).

In 1938, Sinko (respondent in Case No. 6) began to market an automatic lighter embodying the Mead invention, and in 1939 Cuno (petitioner in this case) did likewise. Both had been large manufacturers of the non-automatic devices, but the new type soon became the bulk of their business.

The fact is incontrovertible that not only had the art missed entirely what Mead did and was concentrating on detail improvements of the non-automatic lighter—the lighter that then held the market; but that Mead's invention, once proved, caused the displacement of practically all prior devices.

The Patent in Suit.

In the illustrative example of the invention disclosed in his patent (R. 289-295), Mead showed a wireless type cigar lighter consisting of the holding device (Fig. 1) and the removable igniter unit or plug (Fig. 8).

The holding device has two terminals, namely, the socket member 41 and the spring terminal 52, connected to opposite poles of a battery by the wires 57 and 58 respectively. The socket 41 supports the igniting unit on the base 34 and is rotatably mounted thereon in order that a contact 75 carried by the igniter unit may be moved into circuit-closing position (Fig. 14).

The igniter unit has an igniter resistance coil 83 connected at its outer end with a cup 82 in engagement with the shell contact 65. The inner end of the igniter coil 83 is connected through the stud 84 to the contact pin 75 radially extending through the shell 65 but insulated therefrom. The igniter unit, when carried by the socket in normal position on the holding device (Fig. 16) has its contact shell 65 engaging the socket of the holding device, but the contact 75 does not touch the terminal 52. Hence, the circuit is open.

To initiate operation of the cigar lighter, the igniting unit is manually turned by means of its protruding knob 62 from the position shown in Fig. 16 to the position shown in Fig. 14 until the contact 75 is caught by the detent 53 of the spring terminal 52, thereby establishing an electrical connection from the battery through the igniter coil 83 so that the latter may start to heat.

As the igniting unit contact is moved into closed-circuit position (Fig. 16), the movement of the socket causes a spring 47 to become tensioned so that it will return the igniter unit contact and socket to the "off" position upon release of the contact.

The spring terminal 52 is held in the position shown in Fig. 14, by means of an auxiliary spring 54. The holding action of the spring detent 52, 53, which is reenforced by the spring 54, is in opposition to the action of the spring 47 tending to move the igniter unit to the "off" position shown in Fig. 16.

The Mead patent specification (R. 293, line 112 to R. 294, line 11), brings out that either spring 54 or spring 47, or both, may be made of bimetallic material and so located with respect to the igniter coil that the heat from the igniter acts on the bimetallic spring 54 to weaken it or on the bimetallic spring 47 to strengthen it, with the result that when the igniter coil reaches the predetermined temperature for use, the return spring 47 becomes effective to move the igniter unit contact 75 to the "off" position shown in Fig. 16, out of engagement with the terminal 52. The spring 47, cooperating with the socket supporting the igniting unit, keeps the igniter unit contact permanently in its open-circuit position in which even when the bimetallic means cools off, the contact 52 will not touch the contact 75 until it is again manually moved to closed-circuit position.

To operate Mead's device, therefore, it is merely necessary to rotate the knob 62 until the circuit-closing contact 75 is caught by the heat-controlled detent 53 where it will remain temporarily latched by the latter without further action or attention by the operator. As soon as the igniter coil 83 is brought to the desired temperature for use as predetermined by the setting of the bimetallic elements, the bimetallic elements heated from the heating element cause the contact pin 75 to be released from the detent 53 and moved to open-circuit position.

The return of the knob to open-circuit position is accompanied by a click (now familiar to all smoking automobile drivers and passengers), and both movement and sound indicate that the igniter coil is at the proper temperature, and that the igniter with the heat-storing resist-

ance coil may be manually removed from the socket and applied to the cigarette, cigar or pipe like a hot coal or ember.

The igniter plug is restored to the socket after use, and is retained in open-circuit position until next needed.

With Mead's invention, the operator may use both hands for driving and devote his entire attention thereto, during the heating-up period—contrasted with one-hand driving for about a quarter of a minute required with all prior wireless lighters; the igniter coil is just hot enough for use when the circuit is automatically opened and the signal given—contrasted with close observation or guesswork previously necessary; over-heating or burning out of the igniter coil with its attendant dangers is prevented—for which there was no previous protection in wireless lighters (R. 91); and, lastly, should the operator fail to remove the igniter after the igniter coil is hot, no harm can result because the circuit is automatically opened and will not again close until the operator manually moves the igniter to the "on" position.

These were new and important advantages which seem to us to support patentability. That there is *novelty* is, we think, undisputable. That there is *utility* is fully established.

Mead's Commercial Devices.

Mead's patent is not a "paper patent", for his lighters, substantially as he illustrated them, were made and sold for several years by Mead's assignee the Jessop Company (R. 270-271), under the name of Jesco Automatch. Defendant's Exhibit C (R. 341; offered R. 226) is a drawing of this device.

Petitioner disputes this statement on the ground that these lighters differed from the illustration of the Mead patent by having the heat-responsive return spring located

outside the socket rather than inside. As a matter of fact, it makes no fundamental difference whether the spring is inside or outside the socket, for, when it was placed around the outside the socket in the Jesco Automatch (one of Mead's productions), the socket was provided with apertures through which the heat from the igniter coil could properly reach the bimetallic member. Petitioner's point is weak at best, but it is interesting to note that when Petitioner came to make its automatic cigar lighter, it followed the Mead patent and put its heat-responsive member 16 inside the socket (see Plaintiff's Exhibit 1A, R. 280; offered R. 15-16).

The sales of the Jesco Automatch were substantial, being between 1500 and 2000 (R. 262). They were offered to Montgomery Ward and appeared in the catalog of that company for the Fall and Winter of 1928-1929, Plaintiff's Exhibit 36 (R. 333-334—offered R. 177), and again for the Spring and Summer of 1929, Plaintiff's Exhibit 28 (R. 313-314—offered R. 192).

Petitioner is justified in saying the sales were few. They were, in contrast with the mass-production of Casco or petitioner. But Mead's company was only introducing the devices by offering them to automobile owners. The parties here have the car manufacturers for their customers. The Jessop Company was essentially a selling company, and, to secure its source of supply, bought the Central Stamping Company—in poor financial condition (R. 255)—with which Mead was connected and attempted to continue as a manufacturer (R. 262). However, it was dissatisfied with the general conditions existing in the automotive accessory business, including other things besides these lighters, and decided to get out of it (R. 263).

Petitioner argues that Mead's early commercial devices were a failure because of their construction. The company had some lighters returned, but this is to be expected when manufacturing a new and unknown article, and it is not at

all uncommon. Apparently, the device was sufficiently satisfactory to be accepted by Montgomery Ward, which is quite careful to accept for placing in its catalog only devices of unquestionable merit (R. 264). Certainly, if an inordinate number of devices were returned to the Mail Order House, they would not have been cataloged for the second season, nor would there have been reorders from the same customers, as evidenced by the orders listed in Plaintiff's Exhibit 39 (R. 337, offered R. 205). It is clear enough that the device was withdrawn from the market because of business conditions and not because of any mechanical difficulties (R. 265).

It is established that these old Mead lighters properly serve their function. One of them was successfully operated in the presence of the trial Court (R. 28). This is Plaintiff's Exhibit 12.

However, the case depends on what is disclosed and claimed in the Mead patent and not upon the little or great success of those early commercial embodiments. If, as we contend and as no one can successfully dispute, the specifications and drawings of the Mead patent sufficiently disclose the invention so that it may be practiced by those skilled in the art, Mead has done all that the Statutes require of him. It was the Mead improvement that led to Casco's development, and Cohen testifies that the Mead patent was essential to it (R. 75).

Petitioner argues that the Mead patent is defective because it does not specify the kind of bimetallic material to be used in the device, but, as repeatedly admitted by petitioner's expert Wolfson (R. 130-133), that is true of the prior patents relied upon by petitioner. The obvious answer is that given by Wolfson (R. 133):

"The conditions would govern the choice of metal, and experimentation would determine which metal was

best. You have a general specification of metal due to the conditions, and from that point on you have to experiment to find the best one."

Clearly, novelty of the patent could not have depended upon the kind of material employed.

The Mead Claims in Issue.

Claims 2, 3 and 11 of the Mead patent, which are before the Court, are as follows (R. 294-295):

2. In a device of the class described, a removable heating member having an electrical heating unit, a socket for receiving and holding said heating member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and means responsive to the temperature of said heating unit for interrupting said energizing circuit.

3. In a lighting device for cigars and the like, a removable heating member having an electric heater, a support for receiving and holding said heating member, current supply terminals on said support, said heating member being movable on said support to a position where said heating unit is energized from said terminals and means responsive to the temperature of said heating unit for controlling the heating thereof.

11. In an electric lighter of the class described, a base member, a heater member movably mounted on said base member, an electric heater on said heater member, electrical supply terminals on said base member, said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, and automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater.

These claims are couched in language quite commensurate with Mead's advance, as the Court of Appeals held.

In reciting his combination, Mead first broadly characterizes the wireless cigar lighter by calling for the removable heating member (the plug) and heating unit or heater (resistance coil) thereon, and the support or socket on which the bodily removable plug is mounted for movement to a position in which the resistance coil is energized from terminals on the support (claim 3). Mead then characterizes the new element of his combination in language commendably limited to the precise point of novelty to wit—"means *responsive to the temperature of said heating unit* for interrupting said energizing circuit" (claim 2) or "for controlling the heating" of the heating unit (claim 3). He limited his assertion of monopoly to the very point of his invention, *i. e.*, the combination of the plug, resistance coil and socket elements with a thermostat responsive to the temperature of the heating element or glow member. This limitation clearly distinguishes Mead's cigar lighter from that of his then-unknown contemporary Copeland (R. 426), as will appear below.

The other aspect of Mead's invention, providing for the return of the plug to open-circuit position, is defined in claim 11. Like claims 2 and 3, it characterizes in broad language the elements of a wireless cigar lighter, pointing out that the heater member (plug) is movable between an energized position and an off position. Mead then specifies the new element of his combination as "automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater". This language is justified because, prior to Mead, the plug returned to open-circuit position when and only when the operator removed his hand therefrom. It might be so hot as to endanger the mechanism itself or not hot enough to light the cigar, cigarette or pipe. While the language of claim 11 is broad, it is, nevertheless, not all-inclusive but again merely defines what Mead taught, *i. e.*, the automatic holding of the plug in "on" position and the return of it

automatically to "off" position only when the heating element is at the right temperature.

Mead's claims left open to the public and to all future inventors all other ways of opening the circuit to the igniter; he did not preempt the field.

These features of Mead's invention (1) the controlling of the energizing circuit in response to the heat of the igniting element, and (2) the automatic return of the plug to open-circuit position so that the operator need not hold the circuit closed, are those which made for the great commercial success of the Casco automatic lighter (exemplified by Pl. Ex. 19, offered R. 37) and are those which, apparently, are indispensable to petitioner here and respondent in Case No. 6, in order to compete. The Court of Appeals in this case and the District Court in Case No. 6 had no difficulty with the language of the claims. As the Court of Appeals said by Judge LEARNED HAND (R. 510):

"The claims being valid and there being nothing in the prior art which requires it, we see no reason to circumscribe them closely to the disclosure. Verbally there is no difficulty. Invention lay in the general conception reduced, of course, to practice as shown but the range of equivalents should be as broad as the actual invention, as we have often said. There is nothing which turns primarily upon the precise details of the structure; the claims are good as they read, if good at all. We hold that they are valid and infringed."

On pages 34-48, *infra* will be found a discussion of petitioner's attack upon the claims in suit.

NOVELTY.

The art prior to Mead is completely devoid of any automatic wireless cigar lighter. That Mead was the first to produce an automatically controlled cigar lighter having an igniting unit removable for use when automatically released cannot be disputed. There is not even a suggestion of this in the art prior to Mead.

In fact, the record shows that Mead was the first to give to the public an electric cigar lighter of any kind having thermostatic control of the heating element or glow member.

The Cigar Lighter Art Prior to Mead.

The wireless cigar lighter displaced for use on automobiles the previously common reel type lighter. In that, the igniting unit was constantly connected to a source of current by a cable, the latter being wound on a spring drum so that the igniting unit and cable could be withdrawn from the drum casing and used to light a cigar, cigarette or pipe. In such devices, the circuit was closed either by a manual operation of a button on the igniter or as a result of the withdrawal of the igniter from its socket on the reel casing.

The *wireless* cigar lighter originated by *Morris*, and for which he obtained letters-patent of the United States No. 1,376,154 (R. 387) differed from the reel type in three major respects: (1) It eliminated the cables and the mechanism for winding and unwinding them; (2) it provided for heating the resistance element or glow member without removing it from its holder, and (3) provided for the complete electrical and mechanical disconnection of the igniting unit from the holder so that the glow member could be applied to a pipe or cigar held in the mouth of the user and the igniting unit could be passed from one person to another, even to the back of the car.

The wireless lighter, however, had serious inherent disadvantages. In the reel type the resistance element could be brought quickly to incandescence and could be used at once, being maintained at incandescence by the continuing flow of electric current during the lighting of the cigar, etc. In the wireless lighter, the resistance element, because of its mass necessary to retain its heat for subsequent use, required a quarter of a minute or so in which to be heated to the proper temperature and during which the operator was obliged to hold the plug in place until the glow member was hot enough. After he concluded that it had become hot enough, he took out the plug used it like a match or a torch, and returned it to the socket.

Several types of wireless cigar lighters appeared on the market and in issued patents over a period of several years from 1919 on. Of these, the patents to Morris, $\pm 1,376,154$ (R. 386), Zecchini, $\pm 1,437,701$ (R. 391) and Metzger, $\pm 1,622,334$ (R. 401), are representative of different constructions of wireless cigar lighters. Morris represents a type in which the circuit was closed by bodily movement of the igniting unit to bring contacts thereon into electrical engagement with contacts on the holder. Zecchini represents a type in which a push button on the igniter unit was pushed-in to engage cooperating contacts within the igniting unit itself. Metzger shows a type in which the plug is rotated to close the circuit.

But, regardless of the particular parts that were moved to close the circuit and heat the heating element, in all of the wireless lighters prior to Mead, it was necessary for the operator manually to hold the igniting unit, or the circuit-closing part, in closed-circuit position during the heating-up period; to observe or guess when the heating element was hot enough for use; and then release the circuit-closing part so as to open the circuit.

The chief exemplifications of the prior art are those just mentioned, and in detail their disclosures are:

Morris No. 1,376,154 (application filed 1919—R. 386):

An igniting unit, shown in Fig. 1, is removably mounted in a holding device, shown in Fig. 3, and when normally supported thereby is in open-circuit position, shown in Fig. 5 with the terminal 7 of the holder out of engagement with the contact 17 on the igniter, so that the circuit through a carbon bar resistance 16 and leading back through the metallic parts of the device to the ground is normally open. The igniter is held in this position by a spring 28 except while the operator pushes in on the handle 15 of the igniter, to cause the contact 17 to engage the terminal 7.

The igniter resistance 16 being concealed within the device, the operator had no way of knowing when the igniter was hot enough for use, and had to depend upon experience or guesswork to determine when to relax the operating pressure on the handle 15 and remove the device for use.

Zecchini No. 1,437,701 (application filed 1921—R. 391):

The igniter, shown assembled in Fig. 2, is inserted in a vertical socket having terminals 5 and 6 engaging contacts 14 and 7 respectively on the igniter. The contact 7 is connected with one end of the resistance coil 11 while the other end of the resistance 11 is connected to a contact pin 13. The other contact 14 on the igniter is electrically connected to a movable contact rod 15 carrying a push button 16. A spring 17 holds the contacts 16 and 13 apart except when the operator presses and holds down the push button 16 to close the circuit through the igniter.

Here again the igniter is concealed within the holding device, and the operator had to depend upon experience or guesswork in determining when to release his finger from the button 16.

Metzger No. 1,622,334 (application filed 1925—R. 401):

Metzger has a holding device 14 and an igniter 24 removably mounted on the holding device. Contacts 2 and 3 on the igniter are normally held out of engagement with the cooperating contacts 17 on the holder. In the operation of the lighter, the user depresses the igniter 24 until the lower ends of the terminals 2 and 3 strike the upper surface of the plug 18. The igniter is then rotated until the pins 32 enter the holes 34 when further rotation will be stopped, and by the inward pressure which is maintained by the operator in order to press the igniter 24 down against the action of the tongues 15 and the spring 28, the terminals 2 and 3 will make contact with the terminals 17. The igniter is held in this position until the user observes that the resistance element 1 has become sufficiently heated to light a cigar or cigarette.

The operation was substantially the same in each of these prior wireless cigar lighter patents. When the smoker desired a light, he pushed in on the handle of Morris (R. 386), or the push button of Zecchini (R. 390) or pushed and rotated the knob of Metzger (R. 401). In each case, he held the movable part in operating position until the igniter resistance was heated. With Morris and Zecchini, the smoker had to use his judgment in determining how long to keep his hand on the plug to keep the circuit closed, for he could not see the igniter resistance, and, as a result, when removed for use, the resistance might have become so hot as to be liable to burn out, or might be so cool as not to give a proper light and caused particles of tobacco to cling to the resistance, and while still glowing, to fall or drop onto the smoker's clothing or the floor of the car (R. 91). The record shows these types in a variety of forms to have been on the market up to Mead's time.

The Thermostatic Control Art Prior to Mead.

Thermostatic controls as such were quite well known when Mead made his invention. They had been used for various kinds of electrical devices, and many patents as evidenced by this record were granted on new combinations solving particular problems and producing new and useful results.

Regarding the bearing of this collection of patents on the validity of the Mead claims, the Court of Appeals stated (R. 508):

“The art had indeed for many years used thermostats to break a circuit when it got overcharged; such uses go back to 1893 (Hammarstrom, No. 493,380). Moreover thermostats had been installed as ‘cut-outs’ in tools—e.g. in sadirons—fifteen years before Mead’s application was filed (Andrews No. 1,025,852). But these uses rather fortify than impair the invention; for, the more general and familiar was the use of a thermostat to cut out an overheated member in an electric current, the more curious it is that no one should have thought of its use to remedy the known defects of ‘wireless’ lighters.”

It seems unnecessary to discuss the patents on thermostatic controls, for our adversaries, while explaining several at pages 11-13 of their brief, do not assert that the foregoing recital is inaccurate, or that any of the other instances of general art add to those mentioned by the Court.

Mead’s Combination Is Not Suggested by the Prior Art.

The patents show many different appliances and devices with thermostatic controls—each organized and having a mode of operation calculated to solve a particular problem.

Thermostatic controls, like vacuum tubes and transformers, were known "tools" in the electrical and other arts, as were levers, gears, etc., in mechanics; and no one may rightfully patent *their use*, for any particular purpose. But, many valuable inventions have been made and patented, which utilize these various tools of the art in new combinations.

This is exactly what Mead did. His *conception* involved the broad idea of incorporating a thermostatic control to perform, with associated parts, wholly new functions in a wireless cigar lighter, *i. e.*, that of relieving the operator of the necessity of manually holding the plug in closed-circuit position, and that of automatically and permanently opening the circuit when the lighter coil is at the temperature predetermined for its proper use. In doing so, his *act* involved the making of a new combination as explained above, having an entirely different mode of operation from any thermostatically controlled electrical device or any wireless cigar lighter then in existence. Either of these differences, under the present circumstances where the advantageous results of the new combination and the new services it renders are so striking, would be sufficient to confer patentability on Mead's work.

Mead's combination was different from any prior thermostatic device, because in Mead the effective operation was placed under the sole control of the temperature of the working resistance, *i. e.*, the resistance that performs the work for which the device is intended. In every prior device having a thermostatic control, either the operation of the thermostat was placed under the control of some other thing, such as the sole plate of an electric iron, or of an auxiliary resistance whose only function was to operate the thermostat *after the lapse of a predetermined time*, or upon abnormally heavy surges of current.

The mere use of a thermostat in a wireless cigar lighter would not necessarily produce Mead's combination. This is demonstrated by the work of Smith in England and Rupps in Germany just after the time Mead made his invention.

Smith British Patent No. 285,200 of 1928 (R. 316): This did not issue until 1928, and hence is not prior art. (Rev. Stat., § 4923; 35 U. S. C. A., § 72.) It has an igniter member 25 (Fig. 4) having an igniter coil 26 and is removably mounted on a holder or base plate 15. An ungrounded contact 27 on the igniter normally engages a contact 28 on the holder, and this is connected to a switch lever 19 having a contact 29 which, when the switch lever is pushed in, engages a live contact 18 to close the circuit to the igniter, the other side of the circuit being suitably connected to the battery. The operator after pressing in the lever 19, continues to hold it in manually during the heating-up period and until the igniter coil 26 is incandescent, whereupon he releases the lever 19 and may then remove the igniter for use.

Smith used thermostats 1 and 2 to open the circuit of his wireless lighter when, through lack of attention, the operator held the circuit closed too long by continuing the pressure on the manually operated switch lever 19. This is a mere safety device. His combination does not automatically hold the circuit closed; it does not insure bringing the heater to just the right temperature for use, but only opens it if the igniting resistance gets so hot as to be dangerous; it is a "hunting thermostat", like Harley's (R. 355), and does not *permanently* open the circuit as in Mead, because it closes the circuit again when the temperature falls.

Rupps British Patent No. 298,073 of 1929 (R. 467): Like Smith, this patent is not prior art against Mead, but it does illustrate another method of manually closing the circuit. In this patent, the igniter coil *k* is mounted in the

igniting unit *c* which is removably supported on a holding device *a*. Contacts *b* and *c* on the holding device are normally out of engagement with contacts *f* and *g* on the igniter. To close the circuit, the igniter *e* is rotated to align the contacts *b* and *f* and *c* and *g* in which position the igniter is allowed to remain while heating up. To open the circuit in this particular instance, the igniter is manually rotated from closed-circuit to the open-circuit position.

Rupps used a thermostat *m* in his wireless cigar lighter, yet he did not make Mead's combination. Rupps' combination simply *keeps* the igniter coil hot by a hunting thermostat once the circuit is manually closed by rotation of the igniter. There is nothing to open the circuit permanently when the proper heat has been reached, or to deliver—so to speak—a plug when prepared for its function.

Separately Smith and Rupps seemed to have been inspired with the nebulous idea (such as Mead must have been at first) of employing a thermostat in a wireless cigar lighter. But that is as far as their imagination went toward Mead; they merely used the thermostat to protect the resistance coil from burning out; they did not conceive of the making of the lighter automatic, relieving the operator of the necessity of holding the circuit closed manually and releasing it when ready for use.

Their patents were applied for before Mead's issued, so they did not know of him, and they failed to reach his invention. But they tend to show just the reverse of the situation where several people independently arrive at the same solution of a problem; which has been taken as evidence of lack of invention (*cf. Concrete Co. v. Gomery*, 269 U. S., at page 184).

So, it is clear, both as to the prior art and as to contemporary improvers, that Mead alone hit the solution which many had sought.

The Missing Link.

Thermostatically controlled electrical devices were quite well known at the time Morris (R. 386) first made the wireless cigar lighter in 1919, and it may be fairly asked why Morris did not make Mead's invention while he was about it. Hammarstrom (R. 352) and the rest were old, and these, it is argued, teach all that had to be known to make Mead. Many of the non-automatic devices were sold and put into use before Mead came.

Now that Mead's invention is known and is part of the sum total of human knowledge, it is a comparatively simple matter to reconstruct a manually controlled wireless cigar lighter of the prior art, as petitioner has done in its model of the Morris patent (R. 144), to incorporate therein a thermostatic control.

It is clear that it was not possible to take the Morris wireless lighter and simply add an old thermostat. Something else had to be done. As petitioner's witness Wolfson admitted (R. 144)—

“Of course, you have to provide an actual thermostatic member with a latch of some sort which would engage with some part of the plug to hold it in the ‘on’ position.”

That is what Mead taught Wolfson to do. Even while testifying, Wolfson seemed to have had Mead on his mind, for in continuing his explanation of the necessary changes he says (R. 144)—

“So that the plug can only go in the socket in one position, somewhat similar to the Mead lighter, so that the opening in the plug which gives access to the heating element is opposite the opening which you have made in the shell under the thermostat.”

Assuming that Morris was not advised on thermostatic controls, then was Zecchini likewise uninformed, or petitioner, or Casco, respondent's licensee—a large manufac-

turer—or Sinko, respondent in the companion case? They were in this very business, yet they did not see the thing that—when seen—was adopted. The answer is clear that it did not occur to any of them, that by going to the thermostatic control art and picking out a suitable thermostat and then making certain modifications and changing the principle of operation, the wireless cigar lighter could be so altered that the improved lighter when offered to the public would make practically obsolete all other lighters. The indisputable fact is that prior to Mead the art either did not conceive the idea of making the wireless lighter automatic, or, if it thought of it, did not know how to do it.

Eventually someone else might have thought of it, but Mead was the first and was way ahead of the rest of the art. As a result of Mead's timely invention, we have been given the benefit of an automatic wireless cigar lighter and the public will have free use of the same when Mead's patent expires on November 19, 1946.

Copeland Did Not Have the Mead Invention.

Petitioner argues that there is no substantial difference between the patent in suit and Copeland. This is in error. Copeland's applications were filed (March and April, 1927) a few months prior to Mead's filing date—August 24, 1927. However, the Copeland patents (R. 419-428) were not published until 1931-1932 respectively, long after Mead filed, the Mead device marketed and the patent issued, and the only defense available (R. 146) in relation to Copeland is that of alleged prior knowledge and invention of something as evidenced by the filing dates of the Copeland applications.

Copeland's cigar lighter invention was different in purpose, in function, in mode of operation and in construction

from Mead's; Copeland's and Mead's approaches are really quite opposite—so much so as to be mutually exclusive. Mead's has been accepted and adopted and imitated by the trade, while Copeland's has not and has no commercial history.

There are two Copeland patents—Nos. 1,838,363 and 1,844,206, filed about the same time.

Copeland No. 1,838,363 (application filed Mar. 9, 1927—R. 419-424): This is not a wireless, or plug, lighter, but a device for dispensing and lighting cigarettes carried in a case 10 from which one may be dropped, upon pushing the handle 21 of the slidable dispenser, so as to fall on supports 28 so that the end of the cigarette may lie against a resistance 27 to be ignited thereby. In a way not clear from the patent, the handle 21 is associated with a switch (Fig. 10) for closing the circuit to the resistance 27 and maintaining it closed for a time sufficiently long to permit the cigarette to ignite. The switch is not described in detail in this patent, but Copeland says "This would obviate the necessity of the operator's holding the slidable dispensing element in rearward position during the time the cigarette is being lighted" (R. 422, ll. 91-95).

Apparently, minor importance is attached to this patent by our adversaries (Pet. Brief p. 17).

Copeland No. 1,844,206 (application filed April, 1927—R. 426): This also is not a wireless lighter, but is for a type of lighter quite like that of the other Copeland patent. It has no supply compartment, but merely a socket 11 in which a cigar or cigarette is placed by hand. In the socket, there is an igniter resistance 14 pivotally mounted on a base of refractory material 15 and held in normal position by a snap or buckling spring 23. When the cigar or cigarette is put into the socket 11 and *pushed down* by the user, the heating unit pivots and causes the spring 23 to snap over toward a thermostatic bar 24 placed in the energizing circuit and carrying a contact which engages the contact

28 to close a circuit from the battery 25 through the igniter resistance coil 14. The cigar or cigarette (if its end survives the crushing due to snapping over the spring 23) is to be ignited by the rush of air across the igniter coil 14 and the end of the cigar, for which purpose the tube is provided with apertures 18 and 19 and baffle 21, see Fig. 6. In a modified form shown in Fig. 6, Copeland provides a separate push button for causing the spring to buckle and close the circuit, thus avoiding the necessity of pressing on the end of the cigar or cigarette.

The circuit is held closed by the buckling spring 23 until, *after the lapse of a predetermined time*, the thermostatic bar 24, due to its bimetallic nature, expands and pushes the buckling spring back across its center line.

In explaining the operation of Copeland, petitioner's witness on direct said (R. 147):

"Now, after a passage of time had been sufficient for the current flowing through both the heater element 14 and the winding around the thermostat which are in series, had heated the thermostatic metal to such an extent as to increase its buckling tendency against the spring, buckling spring 23, it would throw that spring back to the open-circuit position as shown, provided, of course, that the thrust on the cigar had at that time been removed."

The automatic operation of the Copeland device has nothing whatsoever to do with whether or not the cigar or cigarette is lighted, except to give it time to light, or whether or not the igniting coil 14 is hot enough to light the cigar. The period of operation is controlled by the extra resistance, not designated by a reference character, which is wound about the thermostatic bar 24 and which is in the circuit including the bar. The resistance on the thermostatic bar is so arranged that it gradually heats the thermostatic bar and is so proportioned that after the lapse of time which should be enough to light the cigar or cigarette (which, as everyone knows, require very different

lengths of time) it has deformed the bar 24 sufficiently to cause the buckling spring 23 to snap back to the position shown in Figs. 2 and 6 (R. 425).

The delay in opening the circuit controlled by the thermostat 24, therefore, is to give the *cigar* time to ignite, "You have to hold it for a sufficient time to light a cigar" (Wolfson, R. 152). In the finding 3 *f* (R. 486) of the trial Court in this case, it was held that—

"this resistance element did not itself serve as an igniter; rather it served to break the circuit after the lapse of time sufficient to accomplish the incandescence of the igniter and the lighting of a cigar."

This would lead in a path away from a wireless cigar lighter rather than toward it, for in a wireless cigar lighter (as Mead taught and as petitioner follows) the circuit should be controlled in response to the temperature of the igniting coil when it is ready to be used to light the cigar.

The differences between Mead and Copeland may be stated as follows: Mead's is a "wireless" cigar lighter having a removable member or plug serving the function of a match brought to the cigar, cigarette, pipe, or other object to be lighted; Copeland does not have a removable plug (R. 486), it is a self-lighter serving the function of a stove into which the cigar or cigarette must be inserted, and which could not be used at all for lighting a pipe. When the cigar is being lighted, in Mead, the thermostat has operated and the circuit is open; in Copeland, the thermostat has not yet operated and the circuit remains closed. In Mead the energizing circuit is opened as a result of the igniter coil reaching a predetermined temperature, regardless of the time required; in Copeland the circuit is opened as a result of the lapse of a predetermined time, regardless of the temperature of the igniter coil. Mead controls the opening of the circuit by heat from the igniter coil (responsive to the temperature of the heating unit, *Cf.* claims 2 and 3); Copeland controls the opening of the circuit by

heat from a separate coil acting independently of the heat from the igniter coil. Mead's device is essentially heat controlled; Copeland's device is essentially time controlled.

It has been argued that very few structural changes were necessary to convert Copeland into Mead's lighter. Nevertheless, in connection with Copeland, the Court of Appeals in this case held (R. 509):

"it did not lead to the necessary modifications of Morris's lighter, nor did it suggest them; it was actually a step away from the 'wireless' plug which is to be taken out, used like a match or a torch, and replaced, and which alone was capable of answering the needs of the art."

The Court of Appeals further pointed out that "Copeland's invention was still-born" (R. 509). There is no evidence and we have no knowledge that anyone ever made commercially a *wireless cigar lighter* even now, with a thermostat operating on the time principle of Copeland. Certainly, petitioner here, and respondent in Case No. 6 do not, although, as pointed out on pages 32 and 33, *infra*, petitioner seems to have tried to. Mead did not use the time-control principle and petitioner did not adopt it; rather, it adopted Mead's arrangement of controlling the circuit in response to the temperature of the igniter coil.

One cannot borrow a part from the Copeland patent and parts from other patents of the prior art to make a synthetic Mead for two reasons: The first is that each of these patents is sufficient in itself to carry out whatever its inventor was trying to accomplish; the second is that each is a complete lighter of its own sort, good or bad, but none involved Mead's idea. Therefore, by putting any two together, Mead's idea and its fulfillment are not attained. This is demonstrated by the efforts of Mead's contemporaries Rupps and Smith in England, who, although they put old things together, did not accomplish what Mead did, because they did not have Mead's idea. As stated by the Court of Appeals in this case (R. 509):

“Nor is it at all relevant that, after one had once thought of applying Copeland’s arrangement to the plug type, the structural changes would have been simple. That is never the test; it is the conception that counts, the act of imagination which assembles the elements into the new and fruitful combination; not the working out of details.”

We regret to say that the section of petitioner’s brief, dealing with the Copeland patents, is so full of misleading, inaccurate and half true statements that, to refer to them all, would simply compound the fault. Reference to a few flagrant instances will show this.

Petitioner says (page 18 of the brief):

“To say that the temperature of the Mead heating member controls the action or that the ‘circuit is opened as the result of the igniter coil reaching a pre-determined temperature, regardless of the time required’, is not true”.

Petitioner makes no reference to the record to support this statement, and none could be made, because it lacks foundation. The whole philosophy of Mead’s invention as described in his specification (R. 291, col. 1, ll. 26-30; R. 293, ll. 41 *et seq.*), and as defined in claims 2 and 3 is that the circuit is controlled or interrupted in response to the temperature of the igniter coil. Obviously, in Mead under similar conditions and identical operating characteristics, the thermostatic element would operate to open the circuit in the same or very close to the same length of time each time it operated, but it would not be *because* of the lapse of time. With varying conditions such as colder weather or a slow-heating igniter coil, the period of time lapsing before the thermostat operates would become variable.

Since cigar lighters are not used under identical conditions at all times, and it is impractical commercially to maintain the electrical values constant, these things will vary and it is perfectly true and unimpeachable to say

that in Mead the circuit is opened as a result of the igniter coil reaching a predetermined temperature regardless of the time required.

Petitioner follows the remark above criticized with this (page 18 of the brief):

"It is also untrue that 'in Copeland the circuit is opened as the result of the lapse of a predetermined time, regardless of the temperature of the igniter coil' as plaintiff has stated heretofore."

The statement attributed to respondent is the absolute truth. Theoretically, it would be possible so to correlate the resistance of the igniter coil of Copeland with the resistance of the thermostat heating coil that the rise in temperature of the two coils would be the same or proportional under the conditions of a still atmosphere maintained at one definite temperature. If this were done, the temperature of the igniter coil would always rise to the same degree in the same length of time, but these ideal conditions do not exist in Copeland. Even if it were possible they would not remain constant in the use of the device. Simple examples will serve to show this. The rate of heating of the igniter coil in Copeland would vary with the temperature of the draft of air flowing across the coil. It would also vary with the character of the smoker's article in contact with it, for a relatively dry cigarette would not conduct as much heat away from the coil with which it is in contact as would a large damp cigar. Yet, neither the draft of air across the igniter coil nor the character of the smoker's article could possibly affect the rate of heating of the coil around the thermostatic switch, and therefore the operation of the thermostatic switch would take place after a lapse of the predetermined time required for the coil of wire wrapped around it to heat it, regardless of how much heat was conducted away from the igniter coil, that is, regardless of the temperature of the igniter coil. All this Johnson shows, R. 211-212.

COMMERCIAL USE OF MEAD'S INVENTION.

The Casco Automatic Wireless Cigar Lighter.

The automatic cigar lighter (Pl. Ex. 19, offered R. 37) of Casco Products Corporation, respondent's licensee, was placed on the market in 1936 and sold extensively. It came after seeing the Mead lighter (R. 75). Defendant's Exhibit B (R. 340, offered R. 68) fairly illustrates the construction of this device which is also substantially shown in the Cohen patent 2,117,232 (R. 306). The holder is provided with bimetallic fingers serving as detents and contacts to engage the shell surrounding the igniter coil which is carried by the igniter plug. When the plug is pushed in, a spring is tensioned at the same time that the contact moves into engagement with the fingers resulting in the closing of the circuit through the resistance, a flange on the igniter also contacting a tongue on the shell of the holder to complete the circuit.

When the igniting unit becomes properly heated for use, the heat from the igniter coil causes the bimetallic fingers to lose their grip on the contact and permit the spring to return the plug to open circuit position whereupon the plug may be removed for use.

It will be seen that the commercially successful Casco device embodies the Mead invention. All the Courts below have held, in substance, that what came after Mead was only "competent designing" (R. 510, near bot.; R. 495, near bot.). The igniter being moved to energizing position is retained in that position until the igniter coil is heated up and heats up the heat-responsive detents, whereupon the circuit is automatically opened and remains open by reason of the return of the circuit-closing contact to normal position.

The Accused Cuno Automatic Wireless Cigar Lighter.

The Cuno automatic wireless cigar lighter is illustrated in Pl. Ex. 1A, 1B, and 1C' (R. 280-281-282, offered R. 15-16). It comprises two main parts—the socket shown on the left of Exhibit 1A (R. 280), and the plug shown at the right. The socket has bimetallic detent latches 16 to engage a flange 35 on the igniter when a knob 22 is pushed in to the position shown in Exhibit 1C' where it is held until the igniting unit reaches the desired temperature, whereupon the heat from the igniter coil causes the bimetallic detent latches 16 to release the contact flange 35 and permit the latter, with the movable parts of the plug, to be returned to open-circuit position shown in Exhibit 1B (R. 281) by a spring 34. When the knob 22 snaps out, the user is apprised that the igniter coil is at the right temperature for use, and the plug shown at the right-hand side of Exhibit 1A (R. 280) may be removed and applied to a cigar, cigarette or pipe to ignite the same.

Petitioner first began to market the accused cigar lighter in the latter part of 1938 or the beginning of 1939, when it was apparently forced by the effect of the success of the Casco automatic lighter, under the Mead patent, on the market. As an examination of Pl.'s Ex. 29 (R. 315—introduced R. 115) shows, from 1936 to 1938, the sale of petitioner's non-automatic cigar lighters had fallen from 920,000 to 220,000 per year. While, naturally, some of this loss of sales might have resulted from the decline of general business, it is no mere coincidence, we submit, that, during this period the sale of Casco cigar lighters did not fall off in anything like this proportion, for, as against the sale of 220,000 Cuno non-automatic lighters in 1938, the sales of the Casco automatic lighters amounted to 977,000 (R. 79). We submit that this indicates clearly that the Casco automatic lighter practically took the market by 1938.

There is no direct evidence as to petitioner's intentions in 1936 with regard to the marketing of an automatic lighter. It is, however, at least persuasive, when consider-

ing the efficacy of the Copeland patent and his method of controlling the circuit, that in 1936 petitioner caused to be filed in the Patent Office an application (now Ashton patent No. 2,084,966—R. 449-458—offered R. 98) disclosing a wireless cigar lighter incorporating a resistance wound bimetallic thermostat such as shown in the Copeland patent. In the Ashton patent it is stated (R. 451—ll. 5-13):

“I propose to provide means for latching a switch to close the circuit through the igniter for a *predetermined time*, and then automatically unlatching this switch and opening the circuit. In the preferred form this is effected by a thermostatic device heated independently of the igniter.” (Emphasis ours.)

By 1939, petitioner apparently decided to abandon any attempt to have the wireless lighter controlled according to a predetermined time, for it came out with the accused device involving heat control from the lighting unit. It seems to us that had petitioner found the Ashton type of device satisfactory, it would not have run the risk of being successfully prosecuted for infringement of the Mead patent by making the circuit controlling member responsive to the temperature of the igniter coil.

The Sinko Automatic Wireless Cigar Lighter.

The Sinko automatic lighter, which is substantially the same as the Casco and the accused Cuno cigar lighters, is before this Court in the Sinko case, Case No. 6.

As to all of these, the same thing may be said that the lower Courts in both cases have said with respect to the Cohen and Johnson patents upon the details of improvement found in Casco lighters, of which petitioner makes so much (*e. g.* brief, p. 29). To use the Court of Appeals' succinct statement (R. 510, near bottom):

“As to the Cohen patent little need be said; here Mead is prior art and anticipates all that can be regarded as more than competent designing.”

Mead's Claims are Valid as to Form and Substance.

As to the form of claims 2, 3 and 11 of the Mead patent, we submit that they define Mead's invention in clear and legal terms. The claims are narrow enough not to be broader than the invention and broad enough not to include unnecessary or optional details.

As typical of the alleged faults which petitioner finds in them, it is said that they do not call for the spring and the latch.

We think this hypercritical: in claim 11, the last element is "automatic means for withdrawing said heater member from the on position to the off position"; how or why should there be means to move from one position to another unless there had been a holding in the on position, as, indeed, is implicit in the next preceding element where the "circuit is *established* from said terminals to said heater" (emphasis ours).

Again, it is said that claim 2 calls for "means for moving said heating member" to closed position, and that the patent does not describe such an element nor is there such an element. It is beyond question that the heating member or plug in Mead is moved. In its operation to close the circuit, it certainly does not move by itself. It has a knob by means of which it is moved, and this is the means of the claim. (All of the devices of the parties have that same means.)

Further referring to claim 2, petitioner asserts that the expression "means responsive to the temperature of the heating unit for interrupting said energizing circuit" is broader than the invention and distinguishes from the art only by function. This is not so, for it was precisely that that Mead had, and the prior art lacked.

Petitioner has attempted to show that in Mead's specification it is suggested that the bimetallic or thermostatic

parts may be heated by the supply current passing through them and the igniter coil, and that, therefore, there is no difference between Mead and Copeland where this happens.

In attempted support of this, petitioner improperly paraphrases the following statement in Mead (R. 293, ll. 104-110):

“In other cases it may be preferred to include the thermostatic element 54 in the circuit from the latch pin 75 so that either the entire or part of the heating current must traverse the bimetallic element 54 and heat the same coincidentally with the heating of the lighting coil.”

On page 18 of its brief, petitioner has entirely misconstrued the substance of this statement to mean that the heating effect on the thermostat of the current flowing through it *alone* controls the operation of the thermostat to open the circuit. The quotation does not infer this, for it is not at all concerned with the operation of the thermostat to open the circuit. It merely states a condition without inferring that this condition is controlling.

The meaning is clear when the quoted statement is read with the context immediately preceding it, to wit (R. 293, ll. 95-104):

“The control action of the thermostatic element 54 depends on the rate at which it is heated while current is being sent through the lighting coil 83. Accordingly, the action of the device will depend on the manner in which the heat control of the thermostatic element will be effected. In some cases the thermostatic element 54 will be heated *only* by conduction of heat from the heating coil 53 (83) and also by radiation and convection.” (Emphasis ours.)

Mead says that in some cases the thermostat may be heated *only* by the heat conducted from the heating coil and also by radiation and convection, and in other cases

may also be heated by heat generated by the passage of all or part of the current through the thermostat. This conclusively establishes that the "heating" of the bimetal by the current was intended to be a mere adjunct of the "heating" of it by the heat from the igniter coil.

Really, in Mead, it does not matter how the bimetal is *heated*—whether "only" by conduction, radiation or convection, or partly also by heat generated by the current flowing through the bimetal. The important thing is that the bimetal operates in response to the temperature, *i.e.*, the degree of heat, of the igniter coil. This is clear from the entire context of the Mead patent. For instance, Mead says (R. 291, ll. 26-32):

"A thermostatic element responsive to the temperature condition of the heating coil releases the engagement of the socket and plug in locked position, whereupon the same are returned to the original position so that the plug may be removed and serve its purpose."

The idea that the thermostat in Mead should be controlled only by the current flowing through it (in which case it would be a mere timing device) is entirely antagonistic to Mead's repeated insistence that the control is in response to the temperature of the igniter coil.

Petitioner and other workers in the art are free, so far as claims 2, 3 and 11 of the Mead patent are concerned, to use without hindrance the arrangement suggested by Copeland, but so far no such device has appeared on the market. Certainly, the accused device of petitioner's has the bimetallic members controlled solely by the heat of the heating element, and so does the Sinko lighter of respondent in Case No. 6, and Casco, the licensee under the Mead patent. Of course, petitioner's argument that the controlling device in Copeland is substantially the same as that of Mead would be better suited if the Mead claims were

broad enough to include time control of the circuit as well as heat responsive control. But unfortunately for petitioner, Mead does not have and Copeland does have the thermostat merely as a timing device calibrated to give sufficient time for the cigar to be lighted and is wholly independent of the temperature of the igniter coil.

Petitioner, while on the one hand asserting that the claim is too broad, on the other, seeks to rob of signification the limitation that the means is responsive to the temperature of the heating unit.

Petitioner also criticizes the claim as being too broad, since it merely calls for the circuit to be interrupted and does not preclude reclosing. From the entire context of the Mead patent, it is clear that the word "interrupted" is used in its ordinary sense. The word "interrupted" is defined in Webster's International Dictionary as follows:

"To break into, or between; to stop or hinder by breaking in; to interfere with the course, current, or motion of; as, to *interrupt* the remarks of one speaking".

This is exactly what happens in the Mead device, for, when the bimetallic member operates the energizing circuit is broken into.

Petitioner charges that the claim does not call for a cigar lighter. But it calls for "a device of the class described", and the device described is one for lighting cigars, cigarettes or pipes, and certainly the claim is therefore drawn upon a cigar lighter. Moreover, the cigar lighter described is a wireless cigar lighter characterized by having a removable heating member, and, since the removable heating member is called for by the claim, it seems to us that it is ridiculous to say that the claim is improper because it calls for a device of the class described.

There are other criticisms, even more casuistic than the foregoing; but we think the samples given will suffice.

We note that petitioner says (page 37 of petitioner's brief)—

“The Court of Appeals for the Second Circuit, in upholding the patent, made no examination of the separate claims in suit, * * *.”

This statement is rather presumptuous. Substantially all that petitioner addresses to this Court upon the subject was advanced to the Court of Appeals, and it must be presumed that it gave it all the attention it deserves. It would appear from the decision of the Court of Appeals that the Court must have given full consideration to the claims, for it said (R. 510)—

“The claims being valid and there being nothing in the prior art which requires it, we see no reason to circumscribe them closely to the disclosure. Verbally there is no difficulty. * * * There is nothing which turns primarily upon the precise details of the structure; the claims are good as they read, if good at all. We hold that they are valid and infringed”.

Evidence Demonstrates that Mead's Invention Was Not Obvious.

That Mead's invention was not obvious is evidenced by a number of persuasive considerations:

(a) **Evidenced by Lapse of Time:** The Morris patent for the wireless cigar lighter was applied for in 1919, and manual wireless lighters were extensively used as shown above, yet it was not until some 6 or 7 years after Morris' invention that it occurred to anyone at all that the nuisance and danger of holding the igniter plug in during the heating-up period could be done away with, or that the regula-

tion of the heating of the igniter coil could be so controlled that it always would be at just the right temperature for use when taken from the holder. Even during the years 1927 and 1928 immediately following Mead's invention when the manually operated wireless cigar lighter had the market, it did not occur to those immediately concerned, such as respondent's licensee, Casco Products Corporation, petitioner here and respondent in Case No. 6, to devise means to make the wireless lighter automatic.

The patented combination was not sufficiently obvious to be recognized by the petitioner or anyone else before Mead, and this condition existed even as to respondent's licensee, Casco Products Corporation, until Mead's device came to Mr. Cohen's attention in 1929 after Mead made his device and so filled a long felt but defined need.

George Frost Co., et al. v. Cohn, et al., 112 F. 1009
1011 (C. C. A. 2).

The effect of the passage of time after need or demand arose and before the invention was made is well known to this court.

Barbed Wire case, 143 U. S. 275, 283; 36 L. Ed. 158.

(b) Evidenced by Apparent Non-Utility: The tendency of logical deduction was against the conception of the thermostatically controlled lighter. Thermostatically controlled devices were known, operating on the principle of opening a circuit permanently when the device got too hot, or opening the circuit after the lapse of a predetermined time. Logical deduction, if the matter had been thought of at all, would have led to the belief that the safety factor of such thermostatic controls was not necessary since the igniting unit was held in by hand anyway, and theoretically at least the operator would not continue the manual opera-

tion of holding the circuit closed any longer than, he would think, necessary. The manufacturer would not be inclined to discern the utility, adaptability and advantage. This is emphasized by the fact that even after Mead marketed his invention on a small scale and when later respondent's licensee, Casco Products Corporation, marketed its adaptation of the Mead invention on a larger scale, infringement did not begin at once but resulted from the force of public demand upon competing manufacturers. The logical tendency was to accept the nuisance and inconvenience of the non-automatic lighter which had been quite well developed, which could be manufactured with much less precision and care, and which was being accepted by the public.

(c) Evidenced by Petitioner's Misdirected Efforts at Improvement: The record shows that even after Mead's invention, the petitioner struggled for years to improve its manually operated lighter as exemplified by the petitioner's Wolfson Nos. 1,732,784 (R. 409), and 1,980,157 (R. 433), and Ashton Nos. 2,060,783 (R. 440), and 2,084,966 (R. 449) patents of record. This effort to improve the non-automatic lighter had progressed to a point where it resulted in a "crowded condition of the art", as the Court of Appeals for the Second Circuit noted in *Cuno Engineering Corporation v. Mechl, et al.*, 113 F. (2d) 862-863, which involved a non-automatic lighter. It would seem that had the provision of an automatic lighter been obvious, petitioner would not have consumed so much time and effort in connection with detailed improvements of the non-automatic lighter, even to the extent of engaging in litigation concerning such alleged improvements.

In the beginning, petitioner apparently sought to make an automatic wireless lighter operate after a "predetermined time" along the lines of Copeland, *Cf.* Ashton patents 2,084,966 (R. 449-458) but nothing came of this. From the testimony of petitioner's witness and chief en-

gineer Wolfson, it appears that petitioner also made some attempts at the Copeland type lighter (R. 151).

Apparently, petitioner was slow to become convinced that Mead was the true solution of the problem. It was only when it appeared that the Mead type definitely took the market that the infringement began.

(d) Evidenced by Misdirected Efforts of Others: This point has been touched upon above, and it is sufficient here to recall that when Smith (R. 316) in England later attempted to make a wireless cigar lighter automatic he did not evolve Mead's combination, and when Rupps (R. 467) in Germany later likewise attempted to make a wireless cigar lighter automatic he did not produce Mead's combination. Both of these were practically contemporaneous with Mead. When Copeland attempted to make a cigar lighter automatic by the use of a thermostat he did not make Mead's combination, but, rather, produced a lighter operating under an entirely different principle, *i. e.*, a self-lighter for cigars and cigarettes, not a wireless lighter (*supra*, p. 27).

Respondent in Case No. 6, the Court will recall, attempted to market its so-called instantaneous lighter without success before it finally acquiesced in the demand of the market and made its accused automatic cigar lighter embodying Mead's invention.

(e) Evidenced by Changes Required in Existing Things to Make Mead's Combination: No thermostatic control of the prior art without change could be added to any wireless cigar lighter of the prior art without alterations to make Mead's combination. The igniter plug had to be changed so that it would stay in closed circuit position, and the thermostat had to be changed to be heated by and to be responsive to the temperature of the working resistance, *i. e.*, the glow member, and release the knob when the resistance

was at the desired temperature. Cf. Wolfson's explanation of the changes necessary to make Morris automatic (R. 144).

(f) Evidenced by the Fact that to Return to the Non-Automatic Lighter would be a Retrogression: Obviously, a cigar smoker would not accept a non-automatic lighter after having had the automatic electric lighter using Mead's invention, for it would be a retrogression to discard the automatic for a non-automatic.

O'Rourke Engineering Co. v. McMullen, 160 Fed. 933, at 938 (C. C. A. 2nd Cir.).

(g) Evidenced by Commercial Success: Commercial success is frequently advanced on the point of invention and lack of obviousness. Generally this is so secondary to a publicity campaign in advertising as to lose its force. Hence there is no such showing of such "prodding" (R. 77-79). Nevertheless, as shown by the chart (Pl. Ex. 26; offered R. 81), the Casco automatic wireless cigar lighter embodying Mead's invention has enjoyed phenomenal commercial success even though these were sold for from 10¢ to 15¢ apiece more than the manual wireless lighters (R. 78). Its customers are the hard fisted automobile manufacturers—not the supposedly gullible public (R. 79-80). In a few years, it practically displaced the non-automatic lighter, and the competitors of respondent's licensee, Casco Products Corporation, were forced to furnish an automatic wireless cigar lighter in order to maintain their trade.

It seems to us that every factor tending to support patentability of Mead's claims as he made them is present in this case.

THE LAW AS TO PATENTABILITY.

It has been demonstrated by the application of tests as to invention laid down by the courts that Mead's invention, in his limited field, required that degree of ingenuity which the courts have come to require as the test of patentability. Degree of invention or ingenuity is not a test contemplated by the Constitution and the patent laws to determine whether or not an invention or discovery shall receive protection.

The Constitution (Article I, Sec. 8, Clause 8) provides:

"The Congress shall have power * * * To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries;"

Under the authority of the Constitution, Congress provided (Rev. Stat. 4886; 35 U. S. C. A., 31):

"Any person who has invented or discovered any *new and useful art*, machine, manufacture, or composition of matter, or any new and useful improvements thereof, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor." (Emphasis ours.)

[The earlier patent acts (of 1790, 1793 and 1836) were substantially to the same effect.]

It will be observed that there is no standard or degree of inventiveness provided for in the Statute. Congress

did provide that the invention shall be "new and useful". No other condition is prescribed.

The requirement for something additional to novelty and utility was written into the Patent Law in 1850 by the decision of *Hotchkiss v. Greenwood*, 11 How. 248, and has been accepted since then—apparently without any examination of its basis.

Congress could have entailed limitations as to the degree of invention to be rewarded by patents but it has never done so.

It has been demonstrated that the device of the Mead patent is "useful" and that it is "new", for no one prior to Mead produced an automatic wireless cigar lighter or the combination of parts for making it.

The section of the Constitution quoted above provides that authors shall also be given award of a limited monopoly for their works. In the administration of the copyright law the degree of originality of the work is not a test of its validity; but, as to copyrights, the only objective test is novelty.

There is no more reason for requiring a certain unspecified degree of genius in connection with an invention than there would be to require a degree of talent in connection with a "book". It may be merely a compilation, as a directory.

While the word "invention" connotes originality it does not involve any idea that a little, or much, genius is required. Yet, if after the invention is made and known, the problem does not seem to have been so difficult of solution that persons of lesser genius than some undefinable standard might have contrived them, the Courts have frequently held the patents invalid. This is substantially what the Circuit Court of Appeals for the Seventh Circuit did in the Sinko case, Case No. 6.

The degree of ingenuity, we submit, is not the test. Rather, the test is—is the invention new?

However, even with the test of whether the ordinary journeyman might have contrived it, if the combination of elements operates on a new principle or has a new mode of operation the invention has been held patentable. We have been unable to find a single decision by this Court, or by any Court for that matter, in which a patent was held invalid for want of *invention* in which it was recognized that there was a new mode of operation present.

The difficulty comes, of course, in recognizing the new mode of operation. This we submit has been the error of the District Court in this case. The Court of Appeals, however, did recognize it and held the patent valid.

The Decisions of the Courts of Appeals.

The Court of Appeals for the Seventh Circuit we submit decided against the Mead patent on the improper premise that (112 Fed. [2d] 335, at 341):

“All that Mead did was to cause the thermostat to operate on the plug in effect the same as Copeland permitted it to operate on the cigar.”

As matter of fact the statement is not correct; but assuming it to be true, it overlooks the proposition that the suggestion of the change was entirely lacking. The inventive part of Mead's mind would have to tell the mechanic in Mead what to do. Lacking the novel conception, nothing would be produced.

But we have shown above that the relation of Mead to Copeland was not as the Seventh Circuit Court found (pp. 25-30, above). The Court of Appeals for the Second Circuit properly approached the question from the point of

view of the prior art at the time of Mead, as appears from the following statement by Judge LEARNED HAND (R. 509):

"It must be owned that Copeland's figure six did disclose a lighter, manually operated, which, once put in operation, did not require continued pressure, which automatically cut out the current when the glow member was hot enough, and which advised the user of that fact. Moreover, very few structural changes were necessary to convert this into Mead's lighter. The 'tubular extension 16' (page 1, line 71), which held the glow member, was already removable; it was only necessary to make it accessible to the user and to attach the wiring to the 'tubular guide, 11' (page 1, line 62). When that was done, the holder would become a 'wireless lighter' quite as much as Morris's or his successors'. This is the strength of the defendant's argument which prevailed in the Seventh Circuit (*Automatic Devices Corp. v. Sinko Tool & Mfg. Co.*, 122 Fed. [2] 335) and in the district court.

"Nevertheless, it does not persuade us. Copeland's invention was still-born; it did not lead to the necessary modifications of Morris's lighter, nor did it suggest them; it was actually a step away from the 'wireless' plug which is to be taken out, used like a match or a torch, and replaced, and which alone was capable of answering the needs of the art. Nor is it at all relevant that, after one had once thought of applying Copeland's arrangement to the plug type, the structural changes would have been simple. That is never the test; it is the conception that counts, the act of imagination which assembles the elements into the new and fruitful combination; not the working out of details. *Potts v. Creager*, 155 U. S. 597, 608; *Reger & Sons v. Scott & Williams*, 63 Fed. (2) 229, 231 (C. C. A. 2); *Patent Royalties Corp. v. Land O'Lakes Creameries*, 89 Fed. (2) 624, 627 (C. C. A. 2); *Kelley v. Coe*, 99 Fed. (2) 435, 440 (C. A. D. C.). Complicated machines, which are in the day's work for skilled mechanics, will appear magic to a tyro who may find nothing but the obvious in a combination that has failed of

discovery for a decade after the need arose. It would indeed be absurd to rate this as a major invention, yet it did bring to what appears to be its final form a contrivance which had become a standard fixture in motor cars; and upon every detail of these as much human ingenuity has been expended as perhaps on any machine. Just such trifles often help sales; in the severe competition of motor car industry the perfecting of even a trifling furnishing like this may be the object of study and experiment. The art itself shows that this has been true here, as we have already seen; and the best test of what persons of routine ingenuity can do is what they have done. Perhaps, given the same technological stage of development, the same inventions are sure to appear and at about the same time, patents or no patents; but it is certainly unwarranted to assume that the small ones need less stimulus than the great ones; rather the contrary, for minds of the first order are more apt to express themselves without other inducement than the work itself. If patents are to go to those who contribute new appliances that are beyond the limited imagination of the ordinary skilled person, this invention seems to us to merit a patent."

The manner in which the Court of Appeals for the Second Circuit has treated the invention of Mead is supported by the decisions of this Court.

The principle is clearly and forcefully stated in *Diamond Rubber Company of New York v. Consolidated Rubber Tire Co.*, 220 U. S. 428, 435, in which the Court, speaking through Justice McKenna, said—

"Knowledge after the event is always easy, and problems once solved present no difficulties, indeed, may be represented as never having had any, and expert witnesses may be brought forward to show that the new thing which seemed to have eluded the search of the world was always ready at hand and easy to be seen by merely skillful attention. But the law has other tests of the invention than subtle conjectures of what

might have been seen and yet was not. It regards a change as evidence of novelty, the acceptance and utility of change as a further evidence, even as demonstration. And it recognizes degrees of change, dividing inventions into primary and secondary, and as they are, one or the other, gives a proportionate dominion to its patent grant. In other words, the invention may be broadly new, subjecting all that comes after it to tribute (*Railway Co. v. Sayles*, 97 U. S. 554, 556); it may be the successor, in a sense, of all that went before, a step only in the march of improvement, and limited, therefore, to its precise form and elements, as the patent in suit is conceded to be. In its narrow and humble form it may not excite our wonder as may the broader or pretentious form, but it has as firm a right to protection. Nor does it detract from its merit that it is the result of experiment, and not the instant and perfect product of inventive power. A patentee may be baldly empirical, seeing nothing beyond his experiments and the result; yet if he has added a new and valuable article to the world's utilities he is entitled to the rank and protection of an inventor."

Earlier, this Court, in *Potts v. Creager*, 155 U. S. 597, 607, speaking through Justice Brown, said—

"Indeed, it often requires as acute a perception of the relation between cause and effect, and as much of the peculiar intuitive genius which is a characteristic of great inventors, to grasp the idea that a device used in one art may be made available in another, as would be necessary to create the device *de novo*. And this is not the less true if, after the thing has been done, it appears to the ordinary mind so simple as to excite wonder that it was not thought of before. The apparent simplicity of a new device often leads an inexperienced person to think that it would have occurred to any one familiar with the subject; but the decisive answer is that with dozens and perhaps hundreds of others laboring in the same field, it had never occurred to any one before. The practiced eye of an ordinary mechanic may be safely trusted to see what ought to be apparent to every one. As was said by Mr. Justice

Bradley, in *Loom Company v. Higgins*, 105 U. S. 580, 591: 'Now that it has succeeded, it may seem very plain to any one that he could have done it as well. This is often the case with inventions of the greatest merit. It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result never attained before, it is evidence of invention.' "

Conclusion.

It is submitted that the Court of Appeals in this case holding the Mead patent valid as to claims 2, 3 and 11 should be sustained.

Respectfully submitted,

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SUPREME COURT OF THE UNITED STATES.

No. 37.—OCTOBER TERM, 1941.

The Cuno Engineering Corporation,	}	On Writ of Certiorari to the United States Circuit Court of Appeals for the Second Circuit.
Petitioner,		
vs.		
The Automatic Devices Corporation.		

[November 10, 1941.]

Mr. Justice DOUGLAS delivered the opinion of the Court.

This is an action in equity brought by respondent for infringement, *inter alia*, upon claims 2, 3, and 11 of patent No. 1,736,544, granted November 19, 1929, on the application of H. E. Mead, filed August 24, 1927, for a cigar lighter. The District Court held these claims not infringed. 34 Fed. Supp. 146. The Circuit Court of Appeals reversed, holding them valid and infringed. 117 F. (2d) 361. We granted the petition for certiorari, limited to the question whether claims 2, 3, and 11 of the Mead patent are valid, because of a conflict between the decision below and *Automatic Devices Corp. v. Sinko Tool & Manufacturing Co.*, 112 F. (2d) 335, decided by the Circuit Court of Appeals for the Seventh Circuit.

The claims in question¹ are for improvements in lighters, commonly found in automobiles, for cigars, cigarettes and pipes.

¹“2. In a device of the class described, a removable heating member having an electrical heating unit, a socket for receiving and holding said heating member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and means responsive to the temperature of said heating unit for interrupting said energizing circuit.

“3. In a lighting device for cigars and the like, a removable heating member having an electric heater, a support for receiving and holding said heating member, current supply terminals on said support, said heating member being movable on said support to a position where said heating unit is energized from said terminals and means responsive to the temperature of said heating unit for controlling the heating thereof.

“11. In an electric lighter of the class described, a base member, a heater member movably mounted on said base member, an electric heater on said heater member, electrical supply terminals on said base member, said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, and automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater.”

2 *The Cuno Engineering Corp. vs. The Automatic Devices Corp.*

There were earlier lighters of the "reel type". The igniter unit was connected with a source of current by a cable which was wound on a spring drum so that the igniter unit and cable could be withdrawn from the socket and be used for lighting a cigar or cigarette. As the removable plug was returned to the socket the wires were reeled back into it. The circuit was closed either by manual operation of a button or by withdrawal of the igniter from its socket. In 1921 the Morris patent (No. 1,376,154) was issued for a so-called "wireless" or "cordless" lighter. This lighter eliminated the cables and the mechanism for winding and unwinding them; it provided for heating the igniter unit without removing it from its socket, and it eliminated all electrical and mechanical connection of the igniter unit with the socket once it was removed therefrom for use. Several types of the "wireless" or "cordless" lighter appeared.² Morris represented a type in which the circuit was open when the plug rested in the socket and closed when the plug was pushed farther into the socket against the resistance of a spring. In Zecchini (No. 1,437,701) the operator pressed and held down a push-button to close the circuit. In Metzger (No. 1,622,334) the operator closed the circuit by depressing and rotating the plug. In each the operator was obliged to hold the plug, or the circuit-closing part, in place until the heating coil became hot enough for use. After he concluded that it had become hot enough (by observation or guess work) he removed the plug, using it like a match or hot coal, and then replaced it in the socket. Thus these lighters were said to require rather continual attention on the part of the person using them, so that there would be no over-heating or burning out of the heating coil.

This inconvenience and hazard were eliminated, according to respondent,³ by the automatic feature of the Mead patent. Mead added to the so-called "wireless" or "cordless" lighter a thermostatic control responsive to the temperature of the heating coil. In operation it automatically returned the plug to its "off" position after the heating coil had reached the proper temperature. To operate Mead's device the knob on the igniter plug was turned to a point where an electrical connection was established from the battery through the heating coil. There the plug remained tem-

² Some of these are reviewed in *Casco Products Corp. v. Sinko Tool & Mfg. Co.*, 116 F. (2d) 119.

³ A patent holding company which holds the Mead patent under *mesne* assignments. No issue, however, is raised under the assignment statute.

porarily latched. When the heating coil was sufficiently hot for use, the bimetallic elements in the thermostat responsive to the temperature condition of the heating coil caused the igniter plug to be released and to be moved by operation of a spring to open-circuit position. The plug might then be manually removed for use in the manner of a match, torch, or ember. When replaced in the socket after use, it was held in open-circuit position until next needed.

Petitioner makes several objections to the validity of the claims—that they do not comply with the standards for full, clear and concise description prescribed by 35 U. S. C. § 33, R. S. § 4888; that they are indefinite and broader than any disclosed invention; and that they are for a device so imperfect and unsuccessful that a construction of the claims broad enough to include it is not permissible. See *Deering v. Winona Harvester Works*, 155 U. S. 286, 15. We do not, however, stop to consider these objections. For it is our opinion that the Mead device was not the result of invention but a "mere exercise of the skill of the calling", an advance "plainly indicated by the prior art". *Altoona Public Theatres, Inc. v. American Tri-Ergon Corp.*, 294 U. S. 477, 486.

Thermostatic controls of a heating unit, operating to cut off an electric current energizing the unit when its temperature had reached the desired point, were well known to the art when Mead made his device. They had been employed in a wide variety of electrical designs since Hammarstrom in 1893 (No. 493,380) showed a bimetallic thermostat to break a circuit when it got over-charged. A few examples will suffice. Harley in 1907 (No. 852,326) included such a thermostat in an electric heater for vulcanizing, so as to limit automatically the temperature attainable. Andrews in 1912 (No. 1,025,852) showed a bimetallic thermostat in an electrical flat iron designed to open the circuit at a predetermined temperature. In 1919 Newsom (No. 1,318,168) showed an electric coffee cooker in which a thermostat, actuated by the temperature within the receptacle, operated to open and close the circuit intermittently. Stahl in 1921 (No. 1,372,207) showed an electric switch automatically released by operation of a thermostat. Hurxthal in 1925 (No. 1,540,628) showed an electric bread toaster with a thermostat for stopping the toasting when the bread reached a given degree of temperature. Copeland (No. 1,844,206), filed April 18, 1927, before Mead, showed

4 *The Cuno Engineering Corp. vs. The Automatic Devices Corp.*

an electric lighter for cigars and cigarettes with thermostatic control. It differed from Mead in several respects. Thus in Copeland's device a cigar was inserted in a tube at the end of which was a heating coil. By pressing the cigar against the heating coil (or in another form, by pressing a push-button) a spring was overset and the circuit closed. When the desired temperature of the heating unit was reached, a thermostatic bar pushed back the spring and opened the circuit. Thus in the Copeland device the cigar (or the push-button) was the "means for moving" the "heating member" of the Mead claims so as to establish the energizing electric heating circuit. The advance of Mead over Copeland was the use of the removable plug bearing the heating unit, as in Morris, to establish the automatically controlled circuit of Copeland.

And so the question is whether it was invention for one skilled in the art and familiar with Morris and Copeland, and with the extensive use of the automatic thermostatic control of an electric heating circuit, to apply the Copeland automatic circuit to the Morris removable heating unit in substitution for a circuit manually controlled.

To incorporate such a thermostatic control in a so-called "wireless" or "cordless" lighter was not to make an "invention" or "discovery" within the meaning of the patent laws. As we have shown, both the thermostatically controlled heating unit and the lighter with a removable plug bearing the heating unit were disclosed by the prior art. More must be done than to utilize the skill of the art in bringing old tools into new combinations. *Hailes v. Van Wormer*, 20 Wall. 353, 368; *Pickering v. McCullough*, 14 Otto 310, 318; *Thatcher Heating Co. v. Burtis*, 121 U. S. 286, 294; *Concrete Appliances Co. v. Gomery*, 269 U. S. 177, 184-185; *Powers-Kennedy Contracting Corp. v. Concrete Mixing & Conveying Co.*, 282 U. S. 175, 186; *Carbice Corp. v. American Patents Dev. Co.*, 283 U. S. 420. Respondent, however, contends that wholly new functions were involved in Mead's conception, viz., relieving the operator of the necessity of manually holding the plug in closed-circuit position, and automatically and permanently opening the circuit when the heating coil was at the temperature predetermined for its proper use. And respondent argues, Mead's new combination had an entirely different mode of operation from any "wire-

less" lighter than in existence and from any thermostatically controlled electric device.⁴

We may concede that the functions performed by Mead's combination were new and useful. But that does not necessarily make the device patentable. Under the statute (35 U. S. C. § 31; R. S. § 4886) the device must not only be "new and useful", it must also be an "invention" or "discovery". *Thompson v. Boisselier*, 114 U. S. 1, 11. Since *Hotchkiss v. Greenwood*, 11 How. 248, 267, decided in 1851, it has been recognized that if an improvement is to obtain the privileged position of a patent more ingenuity must be involved than the work of a mechanic skilled in the art. *Hicks v. Kelsey*, 18 Wall. 670; *Slawson v. Grand Street R. R. Co.*, 17 Otto 649; *Phillips v. Detroit*, 111 U. S. 604; *Morris v. McMillin*, 112 U. S. 244; *Saranac Automatic Machine Corp. v. Wirebounds Patents Co.*, 282 U. S. 704; *Honolulu Oil Corp. v. Halliburton*, 306 U. S. 550. "Perfection of workmanship, however much it may increase the convenience, extend the use, or diminish expense, is not patentable." *Reckendorfer v. Faber*, 2 Otto 347, 356-357. The principle of the *Hotchkiss* case applies to the adaptation or combination of old or well known devices for new uses. *Phillips v. Detroit*, *supra*; *Concrete Appliances Co. v. Gomery*, *supra*; *Powers-Kennedy Contracting Corp. v. Concrete Mixing & Conveying Co.*, *supra*; *Electric Cable Joint Co. v. Brooklyn Edison Co.*, 292 U. S. 69; *Altoona Public Theatres, Inc. v. American Tri-Ergon Corp.*, *supra*; *Textile Machine Works v. Louis Hirsch Textile Machines, Inc.*, 302 U. S. 490; *Toledo Pressed Steel Co. v. Standard Parts, Inc.*, 307 U. S. 350. That is to say the new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling. If it fails, it has not established its right to a private grant on the public domain.

Tested by that principle Mead's device was not patentable. We cannot conclude that his skill in making this contribution reached

⁴ Respondent argues that Mead's combination was different from any prior thermostatic device because in the latter the operation of the thermostat was placed either under the control of some other thing such as the sole plate of an electric iron or under the control of an auxiliary resistance. The point is that in Mead's combination the effective operation of the thermostat was placed under the sole control of the temperature of the working resistance. We agree, however, with the court below that any such difference was merely one of detail of design on which Mead's invention cannot rest. In any case, it is the temperature created in the vicinity of the thermostat that is effective. The manner in which it is transmitted to the thermostat does not rise to the dignity of a patentable device.

6 *The Cuno Engineering Corp. vs. The Automatic Devices Corp.*

the level of inventive genius which the Constitution (Art. I, § 8) authorizes Congress to reward. He merely incorporated the well-known thermostat into the old "wireless" lighter to produce a more efficient, useful, and convenient article. Cf. *Electric Cable Joint Co. v. Brooklyn Edison Co.*, *supra*. A new application of an old device may not be patented if the "result claimed as new is the same in character as the original result" (*Blake v. San Francisco*, 113 U. S. 679, 683) even though the new result had not before been contemplated. *Pennsylvania R. R. Co. v. Locomotive Engine Safety Truck Co.*, 110 U. S. 490, 494, and cases cited. Certainly the use of a thermostat to break a circuit in a "wireless" cigar lighter is analogous to or the same in character as the use of such a device in electric heaters, toasters, or irons, whatever may be the difference in detail of design. Ingenuity was required to effect the adaptation, but no more than that to be expected of a mechanic skilled in the art.

Strict application of that test is necessary lest in the constant demand for new appliances the heavy hand of tribute be laid on each slight technological advance in an art. The consequences of the alternative course were forcefully pointed out by Mr. Justice Bradley in *Atlantic Works v. Brady*, 17 Otto 192, 200: "Such an indiscriminate creation of exclusive privileges tends rather to obstruct than to stimulate invention. It creates a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies, which enable them to lay a heavy tax upon the industry of the country, without contributing anything to the real advancement of the arts. It embarrasses the honest pursuit of business with fears and apprehensions of concealed liens and unknown liabilities to lawsuits and vexatious accountings for profits made in good faith." Cf. Mr. Justice Campbell dissenting in *Winans v. Denmead*, 15 How. 330, 344, 345, 347; Hamilton, *Patents and Free Enterprise*, Mon. No. 31; *Investigation of Concentration of Economic Power*, Temporary National Economic Committee, 76th Cong., 3d Sess., ch. VIII (1941).

Such considerations prevent any relaxation of the rule of the *Hotchkiss* case as respondent would seem to desire.

Reversed.

Mr. Justice FRANKFURTER concurs in the result.

SUPREME COURT OF THE UNITED STATES.

No. 37.—OCTOBER TERM, 1941.

The Cuno Engineering Corporation,	} On Writ of Certiorari to	
Petitioner,		the United States Circuit
<i>vs.</i>		Court of Appeals for the
The Automatic Devices Corporation.	} Second Circuit.	

[November 10, 1941.]

Mr. Chief Justice STONE.

I concur in the result.

I agree that the use of the well known thermostatically controlled heating circuit exemplified by Copeland, with the removable wireless heating unit plug of Morris, in substitution for the manually controlled circuit which had previously been used with the plug, exhibited no more than the skill of the art. The doubt which the court below resolved in favor of patentability because Copeland's invention was "still-born" should, I think, have been resolved in favor of petitioners because Mead was likewise still-born so far as its substantial commercial success is concerned.

The commercially* successful structure for which respondent claims the protection of the Mead patent and which the court below thought satisfied a felt need, is not the structure described by Mead. Both embody the combination of a thermostatically controlled heating circuit with a heating unit borne on a removable wireless plug and used as a means to close the circuit. But they differ structurally in a number of particulars.

To mention only the more important, Mead showed a rotatable socket which is turned by manually rotating the plug when placed in the socket, so as to close the heating circuit. A laterally extending pin projecting from the side of the plug in the Mead structure engages with a spring latch outside the socket to hold the plug and socket in the circuit closing position to which they have been rotated until the latch is released by the thermostatic control, thus permitting the plug and the socket, which is activated by a spring, to rotate back to the open circuit position. The base required for

2 *The Cuno Engineering Corp. vs. The Automatic Devices Corp.*

the accommodation of the rotating socket and its externally operated mechanism was large and cumbersome. Respondent's commercial structure, like the alleged infringing device, utilizes a fixed socket within which the thermostatic circuit control is located and into which the heat unit carrying plug may be inserted without necessity of rotating it as in the case of the rotating plug with the projecting pin shown by Mead. The thermostatically controlled circuit is closed by pressing the plug further into the socket, the plug being restored to an open circuit position by a spring carried on the plug, when the latch maintaining the closed circuit is thermostatically released.

The commercially exploited device because of the differences in its structure from that shown by Mead is the more compact and easily operated. Its utility as a lighter to be located on the dash of an automobile, which is said to be the merit of the Mead invention, is obvious. If the improvements resulting in such utility involved invention it is not the invention of Mead. If they exhibited only the skill of the art their success cannot be relied on to establish invention by Mead, who did not show or make them. The case is therefore not one for the application of the doctrine that commercial success or the manifest satisfaction of a felt need will turn the scale in favor of invention.

Mr. Justice FRANKFURTER joins in this opinion.